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The Mysore Economic Journal

A MONTHLY PERIODICAL

Devoted to the Discussion of all Economic Topics of Interest

VOL. X, 1924

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The Mysore Economic Journal

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INDEX TO VOL. X, 1924.

Leading Articles.

		Page.
1.	The Mysore Constitutional Reforms By "Politicus"	1
2.	Economic Life in a Punjab Village By S. Subbarama Aiyar, M.A.	13
3.	Manufacture of Matches By Dr. S. S. Aiyar, M.Sc.	16
4.	Minor Water-Power Stations By C. Ramachandra Rao, B.A., B.E., B.Sc.	20
5.	British Trade Recovery By Rt. Hon. R. McKenna	22
6.	Co-operative Movement in Denmark By F. Dalgaard	27
7.	U. P. Forests, 1922-23	31
8.	The Mysore Constitutional Reforms, 1923	51
9.	Indian Historical Records Commission By the Editor	61
10.	Indian Economic Progress By Sir M. Visvesvaraya, K.C.I.E.	64
11.	Co-operation in Mysore By Mr. Mir Humza Hussain, B.A., B.L.	73
12.	The New Chancellor of the Exchequer By the Editor	81
13.	National Education By D. N. Sen	84
14.	The Thirteenth Meeting of the Board of Agriculture By A Member of the Board	99
15.	German Technical Schools for Special Industries By Prof. B. K. Sarkar	103
16.	Indian Economic Progress By Sir M. Visvesvaraya, K.C.I.E.	115
17.	Government Annuities as Industrial Pensions By S. T. Bastedo	134
18.	New Mysore Legislature	159
19.	The Probable Future of Immigration Policy of the United States By Virgil Jordan	162
20.	Functions of Indian Universities By Sir Asutosh Mukherjee	164
21.	Manufacture of Salt in India By Sir Richard M. Dane, K.C.I.E.	166
22.	Currency, Credit and Trade By the Rt. Hon. R. McKenna	168
23.	Co-operative Banks and their Uses By F. W. Strack, F.A.I.S., F.C.I.S.	173
24.	Cotton in the Empire By Charles H. Horden	182
25.	An American View of Tariffs By Benjamin M. Anderson, Jr.	184
26.	Separation of Railway Finance By A. S. Venkataraman	201
27.	Indian Railway Budget By Sir Basil Blackett	206
28.	Agricultural Education By Sir Daniel Hall, K.C.B., LL.D.	213
29.	Sandalwood Oil By B. Sitaramachar, B.A., B.C.E.	218
30.	European Currency Fluctuations By G. Ward Price	221
31.	The Decline of American Trade Unionism By Virgil Jordan	245
32.	Indian Tariff Board's Recommendations	247
33.	Agricultural Meteorology as a Field for Investigation By Sir A. D. Hall	254
34.	Mysore Finances By A. R. Banerji, Esq., C.S.I., C.I.E.	285
35.	University Education in India By H. E. Lord Reading	291
36.	Malabar Tenancy Problem By S. Subbarama Aiyar, M.A.	295
37.	Men of To-day—Mr. Ramsay MacDonald	317
38.	The Dawes Report	325
39.	Sir Asutosh Mukherjee By Sir K. Bose	329
40.	Growth and Policies of Labor Banks in U.S.A.	331
41.	Agricultural Wages Enquiry	332
42.	Infant Mortality and its Prevention By Rao Bahadur K. Raghavendra Rao, B.A., M.B. & C.M.	343
43.	India's Financial Problems By Sir Basil Blackett	365
44.	Success in Life : The Importance of Starting Right By T. P. O'Connor, M.P.	368
45.	Britain's Garden Cities By James Lumsden	370
46.	Foreign Trade and Immigration in U.S.A. By Francis H. Sisson	372
47.	Education of the Modern Egyptian Women By Lady Drummond Hay	373
48.	The Study and Teaching of Agricultural Economics By A. W. Ashby	384
49.	Plant Match Wood in India By Mr. J. Ramanathan	390
50.	The Outlook in Mysore By A. R. Banerji, Esq., C.S.I., C.I.E.	409
51.	India's Economic Problems By Sir Basil Blackett	412
52.	The Indian Cotton Excise By S. Subbarama Aiyar, M.A.	416

		Page.
53.	New Industrial Power By Sir Robert Hadfield, Bt., F.R.S.	418
54.	India's Trade in 1923-24 By Mr. T. M. Ainscough, O.B.E.	419
55.	Women's Education in Mysore By A. R. Banerji, Esq., C.S.I., C.I.E.	422
56.	Co-operation in Mysore By A. R. Banerji, Esq., C.S.I., C.I.E.	428
57.	Indian Income-Tax By Mr. A. S. Venkataraman, B.A.	432
58.	Vetiver Oil By C. D. V. Georgi	437
59.	Income-Tax Formalities	438
60.	Wages and Cost of Living in U. S. By Virgil Jordan	451
61.	Fresh Fruit as Food By T. H. J. Hargreaves, M.R.C.S., L.R.C.P.	453
62.	India's Iron and Steel Industry By H. M. Surtees Tuckwell	455
63.	Co-operation in Bombay By Prof. H. L. Kaji	459
64.	Chemical Research in India By Prof. Jocelyn F. Thorpe, F.R.S.	464
65.	Free Secondary Education in England and America By Harold T. Wilkins	471
66.	The Middleman in Trade By Sir Ernest Benn	487
67.	Cotton in India By H. E. Lord Reading	495
68.	The Co-operative Movement By Sir Leslie Wilson	498
69.	Life and Its Mechanism By Sir J. C. Bose, F.R.S.	501
70.	"Indian Railways" By A. S. Venkataraman, B.A.	505
71.	Salt Production in Bombay	507
72.	Development of Industries in Bengal	509
73.	Industries of Mysore in 1923-24	513
74.	Further Protection to the Steel Industry	522
75.	Cause of Spike Disease of Sandal	524

Miscellaneous Articles.

		Page.
1.	Sisal and its Supporters	36
2.	Coffee in India, 1922-23	37
3.	Sericulture in Madras	38
4.	Profit-Sharing in Great Britain	40
5.	Bombay Salt Administration	42
6.	Trade and Public Companies in Bombay	63
7.	The Tenth Mysore Provincial Co-operative Conference	80
8.	Match Industry of Japan	82
9.	U. P. Industries Department	83
10.	Forest Exploitation in Bihar and Orissa, 1922-23	89
11.	Water Power at Periyar	90
12.	Madras Fisheries	91
13.	The Theory and Practice of Inflation	107
14.	Paper-Making in Australia	111
15.	Industrial Research in U. S.	112
16.	The Motor on the Farm	113
17.	How Artificial Silk is Made from Spruce	120
18.	Labour Banks in the U. S.	122
19.	Electric Light on Plant Growth	123
20.	Education in Russia	124
21.	The War against Waste	126
22.	Indian Mineral Production in 1922	127
23.	Education in Bombay	131
24.	Industrial Development of India	132
25.	Progress in Cochin	133
26.	Broadcasting in India	136
27.	Engineering at the British Association	137
28.	Income-Tax Act	143
29.	India and Parliament	144
30.	President Harding on Co-operation	150
31.	The British Cabinet and the Co-operative Movement	161
32.	Russell Sage Foundation	176
33.	Capital-Sharing in the U. S.	177
34.	Russian Monetary Conditions	178
35.	Education in India	179
36.	Industrial Psychology	186
37.	Cotton-growing in Australia	205
38.	Cotton Waste as a Raw Material	208
39.	National Forest Policy	212
40.	Burma's Mineral Wealth	217
41.	Bamboo Pulp	220
42.	Mineral Wax Production in Poland	222
43.	Co-partnership in Industry	223
44.	Bombay Hand-Weaving Industry	225
45.	International Chamber of Commerce	226
46.	Wanted More Reforms	227
47.	India and British Empire Exhibition	228
48.	The War against Rot	229
49.	Industries in Madras, 1922-23	230
50.	Standardization in Industry in Norway	232
51.	State Loans to Farmers	233
52.	Match-Making in Ceylon	234
53.	Nikolai Lenin	236
54.	Industrial Decoration for Women	246
55.	Manufacture of Paper from Coconut Husks	253
56.	Mr. Chesterton on Education	258
57.	Agriculture in the Punjab, 1922-23	259
58.	Wool Experiments	261
59.	Match Industry in Bengal	262
60.	Indian Agricultural and Cattle-Breeding Problems	265
61.	Korai Grass Cultivation in Karur Taluk	268
62.	The Hairy Caterpillar Pest	269
63.	Intellectual Property	271
64.	Trade of Australia with India	278
65.	Railway Fares	281
66.	Power from the Tides	282
67.	Swiss Railway Electrification	294
68.	Co-operation in Japan	297
69.	Paper-makers' By-products	298
70.	Indian Taxation Committee	299
71.	Algebra by Machinery Printing without Type	300
72.	Joint-Stock Enterprise in India	301
73.	Education in U. P.	304
74.	British Empire Exhibition	306
75.	Bi-Centenary of Longmans	307
76.	The British Budget	312
77.	Baroda's Educational Progress	319
78.	Co-operation in Ireland	320
79.	Village Life in Montenegro	321
80.	Sisal Cultivation	333

		Page.
81.	India's Mineral Resources	337
82.	Flying for All	340
	By Harry Harper	
83.	Trading with Russia	341
84.	Industries of the Baroda State ..	342
85.	National Debt Redemption	347
86.	British Empire Exhibition	349
87.	Speaking Films	350
88.	Indian Paper Industry	355
89.	Men of To-day—M. Herriot.. ..	362
90.	Bombay University Reform ..	367
91.	University Finance	371
92.	Hours of Work in Indian Factories ..	374
93.	Co-operation in Madras	375
94.	Britain's Dye Industry	377
95.	The Latvian Central Co-operative Bank ..	378
96.	Bombay Hand-Weaving Industry ..	378
97.	Indian Trade Commissioner in London ..	381
98.	A Paper-Made World	388
99.	Agricultural Notes from U.S.A. ..	392
100.	At Wembley—Utilization of Fuel ..	394
101.	The Indian Mercantile Marine Committee	396
102.	The New French President	406
103.	The Coconut Pearl	415
104.	"Beam" System Wireless	424
105.	Education in India, 1922-23 ..	425
106.	Motor Vehicles and Highway Income ..	427
107.	South Africa's New Premier ..	429
108.	Mysore at Wembley	430
109.	Cauvery Agreement	439
110.	Swiss Limited Companies	440
111.	Agricultural Notes from U.S.A. ..	446
112.	Superior and Inferior Races.. ..	452
113.	The Cinema in Schools	466
114.	Sericulture in Mysore, 1923-24 ..	467
115.	Indian Emigration	468
116.	Indian Currency Problem	470
117.	Cottage Industries Institute ..	472
118.	Town-Planners of Ancient India ..	473
119.	India's Hemp Trade	474
120.	Advertising Men in Conference ..	477
121.	Agricultural Notes from U. S. A. ..	485
122.	Aircraft in Forest Surveys	489
123.	Printing : Yesterday, To-day and To-morrow	492
	By R. E. Barnett, B.Sc., A.R.C.S.	
124.	The Voice of Wireless	504
125.	Cotton Piece-Goods	512
126.	Prospectus Law	515
127.	The U. S. Immigration Law Explained ..	517
128.	Irrigation in the Punjab	519
129.	Agriculture in the United Provinces ..	520
130.	Manufacturing Chemistry	525
131.	British Trade Policy	529
132.	Madras Agricultural Notes	533
	Scientific and Industrial Research in Britain	33
	Economics in the West	43, 93, 146, 238, 274, 315, 351, 399, 441, 475, 527
	Canadian Trade and Finance	45, 155, 192, 308, 360, 442, 480, 531
	Books in Brief	48, 96, 156, 198, 243, 284, 323, 363, 407, 448, 538
	Indian Economic Notes	140, 195, 242, 322, 354, 397, 494, 535
	Notes from America	151, 189, 279, 356, 379, 482

The Mysore Economic Journal

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The Mysore Constitutional Reforms.

By "Politicus".

The Government of Mysore deserve to be congratulated on the publication in handy form of a *Manual* of all the literature relating to the new changes introduced into the constitution of the State, including the Introductory remarks of Mr. A. R. Banerji, its Dewan. This gives us an opportunity to sketch out in brief outline the lines of advance indicated in the Reforms introduced by H. H. the Maharaja's gracious Proclamation. In this connection we should first like to refer to the criticisms that have been offered on it. As might have been expected, opinion has been sharply divided upon its merits. One class of critics has claimed the Scheme as a real and substantial advance, considering all the circumstances in the State ; another has taken the view that it does not go far enough to meet the requirements of the situation. Between these two opposite schools of thought, almost every shade of opinion, for or against, has been represented. Apart from those who commonly speak in favour of it, those who have criticised it appear to have missed the main features of the Scheme, probably because they have had to express opinions without a full comprehension of its real import. The corrective to their view is a careful study of the Scheme as a whole. It has for its basis a reconstitution of interests—not only as between the Ruler and the Ruled but also as between the Paramount Power and the Ruling House. Truth in the great practical concerns of life, is so much a question, as Mill once observed, of the reconciling and combining of opposites, that very few have minds sufficiently capacious and impartial to make the adjustment with an approach to correctness. Hence it is that a close study of the Scheme is necessary before we charge it either as insufficient or ill-considered.

Now, what are the merits of the Scheme as set out in H. H. the Maharaja's Proclamation and the Legislative measures giving effect to it ?

I. Diarchy, which is now not wanted in British India, has been avoided.

II. The Powers of the Representative Assembly and the Legislative Council are enlarged, while the basis of each of these institutions is broadened to an extent which will bear comparison with any advanced country, East or West.

III. Disqualification of women from registering as voters has been discarded.

IV. Graduates (without property qualification) are given the right of registration. (This is not so even in England, where the registered graduate has a vote only in connection with the election of University representatives.) This is a valuable privilege so far as the general constituencies are concerned, and is eminently in keeping with Indian sentiment.

V. The strength of the Representative Assembly has not been decreased while its membership has been confined to non-officials. Under the Scheme 275 members is the limit prescribed—150 from rural areas ; 30 to 50 from urban areas ; 15 to special interests ; and 35 to unrepresented minorities. [In 1915 the British House of Commons consisted of 670 members and the electors numbered about 8½ millions, *i.e.*, about $\frac{1}{6}$th of the total population. The Mysore Representative Assembly as now constituted will have 275 members, *i.e.*, slightly less than half the strength of the House of Commons of 1915, while its voting strength will be raised from about 28,000 to over 100,000.]

VI. Communal Electorates have been avoided and with it much unnecessary strife has been

discountenanced. The establishment of what are really Electoral Colleges for the return of members by recognized minorities is a solution that ought to be widely welcomed. It points the way out of a bad *impasse* to British India.

VII. The representation of special interests has been systematized and Labour has been recognized as one of the special interests to be recognized to be represented both in the Representative Assembly and on the Legislative Council.

VIII. As to minorities, adequate provision has been made, as stated above, for their representation under a Scheme which seeks to avoid the widening and perpetuation of the cleavage between communities. Communities which form district social groups and are not likely to obtain their due share of representation are afforded special protection by the guarantee of a fixed number of seats both in the Representative Assembly and on the Legislative Council.

IX. Election is practically compulsory for all and must be gone through, the guarantee being a temporary makeshift.

X. A Statutory basis is given to the Representative Assembly.

XI. The Representative Assembly is entirely non-official; and the Legislative Council will contain a Statutory non-official majority controlling Legislation and Finance. [Out of 50 members, 30 will be non-officials —8 from Representative Assembly, 2 from Urban Constituencies, 8 from Rural Constituencies, 4 from Non-territorial Constituencies, and 8 nominated by Government to represent special interests and minorities or for any other cause.] This Constitution would mean popular control over both finance and legislation. Wisely used, this power of popular control ought to mean much.

XII. In regard to Representative Assembly, the mixing up of direct and indirect Elections has been done away with.

XIII. Widening of the constitutional rights of the Representative Assembly. It has, under the Scheme, the privileges of interpellating and of being consulted on the levy of new taxes—"new tax" being defined by the Mysore Representative Regulation as "any tax which requires for its imposition the passing of a new Regulation or the amendment of an existing Regulation"—and, except in cases of urgency, also on the general principles of all measures of legislation within the cognizance of the Legislative Council. It has also the right of passing resolutions on matters relating to public administration, and on the general principles and policy underlying the annual State Budget. The Assembly has the right to divide on all questions on which its opinion is taken. As regards the Legislative Council, it has, subject to the usual limitations as to matters relating to the Paramount Power, the Ruling House, and like matters, the power to make Laws and Regulations. As to the Budget, it may assent or refuse to assent to a demand, or reduce the amount either by reduction of the whole grant or by omission or reduction of any of the items of expenditure of which the grant is composed. There are the usual limitations as to restoration of disallowed demands, which will be referred to below, and as to items scheduled to be outside its purview. The Council has, of course, the right to interpellate and to move resolutions.

XIV. Standing Committees to be elected by the Representative Assembly and the Legislative Council to enable these bodies to maintain closer touch with and influence the everyday administration of the State. Three such Standing Committees have already been sanctioned.

XV. The Economic Development Boards to be reconstituted so that they might get into closer relationship with the Representative Assembly and the Legislative Council. These will be practically three other Standing Committees.

XVI. Revision of the constitution, powers, and functions of Municipal Councils, District and Taluk Boards and Village Panchayats so as to give them the largest possible measure of responsibility and autonomy in the administration of local affairs.

In the scheme as proclaimed and legislatively put through, it must be acknowledged, caution has been the guiding factor. Though reform by high explosives has been commended at times, in the particular circumstances of Mysore, caution has been doubly, nay trebly, needed. First, because of its peculiar obligations under its Treaty with the British Government of India. Secondly, because it has a great reputation for statesmanship bequeathed to it, which it is its duty to maintain unimpaired. And thirdly, because it has to see to it that in ending one era, it sets its feet on another firmly and well. Critics should bear in mind that (1) some division of functions is necessary as between the Government and the People's representatives; (2) some division of labour

between the Representative Assembly and the Legislative Council; and (3) some co-ordination of work as between these two by a person who is in close touch with both these bodies. The *raison d'etre* of the scheme will be apparent when these three cardinal points are borne in mind. The reason for the much criticised factor in the Scheme—the Dewan of the State presiding in both the Assembly and the Council-will now, perhaps, be clear. Similarly, the reason for the institution of Standing Committees and the abandonment of the Diarchic form of Government will be easily perceived. As a forward step, the Scheme has merits that cannot be summarily brushed aside. Particularly, there is much to be said in favour of the divisions of functions and powers as between the different parts of the body politic, apart from the Prerogative of H. H. the Maharaja. All modern experience seems to us to point to the advantages of a centralization of power and a delegation of functions. The Scheme, as adumbrated, is, to our minds, well poised. What is required is working it to the fullest extent. At the end of, say, ten years, the change would be so great that who knows Responsible Government of the full fledged Western type may not follow—instead of the halting Diarchy which is neither here nor there, nor anywhere indeed. One word more on this head, before we leave it. The casting away of Diarchy means, on the financial side, not a little, as we know now from the working of the British Indian models set up for us and worked for some three years now. We know people will say we can work it cheaper out here, but we think the grounds for thinking so are not quite so plain to us.

It seems strange that those aspects of the Scheme which mean additional powers and rights have appealed so little to the public, while those aspects of it which will not take away anything from their exercise of them have created just the impression they should not. The fact is that while the power conceded is solid, there is nothing to create a glamour about it. The result is what it has been. It has been attacked from at least three sides: (1) That there is no real yielding of Sovereign Power (in the constitutional sense) to the people. This can only result if the Sovereign of the State gave up a part of his Prerogative in favour of the people. This is nowhere the case, and those who urge this as a point as against the Scheme can have little or no idea of Constitutional history. (2) That the Government—*qua* Government—is not the People's Government inasmuch as there is no popular 'Minister' chosen by the People's representatives or nominated by H. H. the Maharaja's Government in their place on its executive side. Nowhere does the Proclamation bar this and this may yet follow hereafter, as has indeed been indicated in the announcement made in October, 1922, foreshadowing the scheme of reforms. If the powers now bestowed are well utilized, the Government would themselves soon see the utility of having a representative at least of the People within the fold of the Government. That is the very reason why the present Scheme should be taken advantage of to the fullest extent. Confidence begets confidence. Trust and test go together in political advance as in business. (3) That it is inexpedient (*a*) that the Dewan of the State should be President of the Representative Assembly and of the Council, (*b*) that the Government (apart from H. H. the Maharaja) should have power under Section 12 of the Legislative Council Regulation to frame emergency Regulation to have force for six months from date of its promulgation, and (*c*) that the Government (apart from H. H. the Maharaja) should have the power under Section 13 to restore Budget demands disallowed by the Council, and to authorize in cases of emergency such expenditure as may, in its opinion, be necessary for the safety or tranquility of the State or any part thereof, or for the discharge of Government's responsibility. This criticism is based on a variety of misconceptions, three of which may be set down here. First, the position of the Dewan of the State is usually held by an Indian and it is manifest he is, and will be more so in the future, likely to think with the People than any Governor of an Indian Province may be expected to. What affects him will likewise affect them and *vice versa*. The chances of a Dewan-President proving anything other than acceptable to the People's representatives, or of a Government at the head of which he stands restoring a demand properly disallowed or framing emergency legislation not required by the People are really little. These provisos are set down by way of caution and no more. Experience shows that some of these are required. It is strange that the very provisions which are least likely to come to the fore in the actual working of the new constitution should attract wider attention than the parts of it which mean more strength, more power, and more authority to the People. These are merely safeguards and limitations which

necessarily exist in every Scheme of Government. There is no need to misunderstand their real functions in the early stages of what might be termed a Scheme of progressive realization of "Responsible Government". They should not, in any case, be taken out of their context, and made the starting points for attack of the whole Scheme. Secondly, in regard to these safeguards (about emergency legislation and restoration of disallowed grants) the position of the Government is analogous to the Governors of the British Provinces and hence the reservation of such powers to them seems both constitutionally correct and legitimate. The undesirability of placing H. H. the Maharaja *personally* (as apart from his Government) in a position of overruling or vetoing and bringing him into conflict with the popular bodies will perhaps be apparent to every one. Thirdly, these safeguards and limitations can be successfully nullified if the People's representatives work their powers and rights justly and effectively. This by itself shows their position and scope in the Scheme. They cannot be touched if the chances for doing so are not allowed to crop up by the People's representatives. In an Indian State like Mysore, it is possible, we state it with some experience of actual conditions in it, to work the Scheme without giving a chance to the Government to have any recourse to these reserve powers. The British Provinces have, it is true, their own experience in this matter ; but conditions differ and let us hope, the results also will differ. The greater reciprocation between *Indian Governments* and *Indian People's representatives* is likely to lubricate the constitutional machinery a great deal better than in the British Provinces, where the situation in this regard is different. The same remark applies to the position of the Dewan-President of the Council and the Assembly. As regards the Assembly, a little reflection will show that the advantage of possessing the Dewan as its President is great. The functions of this Assembly are such that he should continue as its President. Unless its constitution is radically altered and its utility impaired as a result of such change, a change in its Presidentship cannot, we think, be contemplated. It is, in fact, not practical politics. As regards the Council, the Scheme being not based on Diarchy, but on a full advance in time towards responsible Government, contemplates a situation where the head of the Government alone could effectually discharge the functions of President. It is a question if even a panel of Vice-Presidents chosen by the Council can be brought into line with the basic ideas underlying it. With a further change in the *personnel* of the Executive, a change is *automatically* possible, as every member of the Executive Council is *ex-officio* Vice-President of the Representative Assembly, under Section 4 of the Representative Assembly Regulation and an *ex-officio* member of the Legislative Council under Section 2 and has the right under Section 7 (2) to preside, in the absence of the Dewan-President. The constitution as framed aims at a form of Government which is widely different from Diarchy and we should not judge it, therefore, from the Diarchic point of view, with which we have now become so familiar. The tendency to do this should, we think, be resisted, as it is of little service to us in understanding the Reform Scheme introduced in this State. While examining the State Scheme, we should not, in one word, think in terms of Diarchy. Diarchy has been discarded as unsuitable and there is little use in importing its implications when criticising the local constitutional advance.

Among the minor suggestions put forward by some, a great many have been met. The question of communal electorates has been discreetly avoided. The guaranteeing of two seats to Mahomedans in the Legislative Council in certain circumstances (see para 28 of Government Order, dated 27th October 1923) seems fair. The incentive for this community, which contains many public-spirited gentlemen of note, to stand for general constituencies ought to be encouraged. We trust they will contest and come up as popular representatives from the general constituencies ; if they are not elected, they have the chance of nomination. It has been suggested that as two seats are guaranteed, the incentive for contesting general constituencies will be less. This, we think, is a mistaken idea. The general constituencies offer a *larger* field and promise a *better* return than the bare **two** seats set apart for them under the Scheme. Human nature being what it is, our Mahomedan fellow-citizens are likely to take advantage of the larger chances offered them under the Scheme than rest content with the two seats offered as the maximum under the Rules. The suggestion as to Yelandur and Sringeri Jaghirs being granted a foothold in the Representative Assembly has been adopted. These two Jaghirs have been declared Rural constituencies for the purpose of returning a member each

to the Assembly. Naturally the somewhat extravagant demands of the Representative Assembly being empowered to call for special sessions of the Assembly *suo moto*, etc., have been discountenanced. Words need not be wasted on such proposals. Similarly questions affecting the policy of the Government of India or Treaty rights have been rightly put outside the purview of both the bodies. We need not enlarge further on what is given and what is not given under the Scheme. What *is* given is valuable enough and this has been summed up thus :—

"Property qualifications of voters to the Representative Assembly have been reduced by one-half. A large number of urban constituencies have been created. The disqualification of women, on the ground of sex, from exercising the franchise has been removed.....The unscientific combination of direct and indirect elections in the Representative Assembly has been done away with. The representation of special interests has been systematised and Labour has been recognized as one of the special interests to be represented both in the Representative Assembly and on the Legislative Council. Adequate provision has been made for the representation of minorities under a Scheme that seeks to avoid the widening and perpetuation of the cleavage between communities. Communities which form distinct social groups and are not likely to obtain their due share of representation are afforded special protection by the guarantee of a fixed number of seats both in the Representative Assembly and on the Legislative Council. The Representative Assembly has been given a definite place in the Constitution and its position as a popular body placing before the Government the wants and wishes of the people and voicing public opinion in respect of legislation, taxation, finance and administrative measures generally has been recognized by Statute. The strength of the Legislative Council has been substantially raised and it has been given an increased elected element with a statutory non-official majority. By its power of voting on the State budget, it will in future have an effective voice in determining the financial policy of the Government. The association of the representatives of the people in the every-day administration of the principal departments of Government is secured by the formation of Standing Committees consisting of members of both Houses. The Development Boards formed some years ago to secure the co-operation of the people in promoting the economic progress of the State have been reconstituted and continued in close relationship to the Representative Assembly and the Legislative Council. Steps will be taken for granting to local bodies as large a measure of responsibility and autonomy as possible in the disposal of matters of local importance. Thus the existing institutions have been consolidated, their powers enlarged and their functions co-ordinated."

The true test of the Reforms is whether the People's representatives have a substantial voice in and control over *Legislation*, *Finance*, and *Taxation*. What we have stated above will show that under the new Scheme, they have. It is true that the powers are hedged round with safeguards and limitations. But these should not scare us away. They are to be found, in varying degrees and forms, in almost every free constitution in the West. These limitations are there for eventualities and no more. They can be rendered obsolete and valueless by a responsible use of the powers given by the Scheme. If for practical purposes the power of the purse is effective, if legislation of an undesirable kind affecting the interests of the people can be prevented and of a desirable type given effect to, and if taxation is rendered impossible without popular consent, can it really matter much if Government possessed, as all governments do possess the world over, certain *reserve* powers in themselves to meet certain extraordinary contingencies ? Have the people, under the Scheme, the right to decide what is good for themselves or not ? If so, do they govern the policy of Government or not ? There can, under the Scheme, be only one answer to these questions. If this right to control Government policy is well secured, and if the franchise is broadened, and unnecessary friction between Communities done away with and the way laid out for a progressive realization of higher rights and powers implied in "Responsible Government," can it be denied that a Scheme of Reforms which gives so much and which promises yet more is either shadowy or unsubstantial ? It is surely one thing to ask for more than is given in the Scheme ; it is another thing to fail completely to understand what the Scheme is. It is unnecessary to belittle what the Scheme does in order to ask what it has not done. They are surely blind who will not see. If only those who still sit on the fence will jump on the right side, and put their best into it, the Scheme will prove a success and open the way out for the removal of misconceptions about it and help the deve-

lopment of political life in the State on sound and safe lines.

We would add by way of appeal that this is not the time for exhibiting an unreasonable attitude or for canvassing of extravagant demands. H. H. the Maharaja, in his kindliness of thought and feeling towards his subjects, has, as becomes a statesman of his eminence and reputation, done his part; and he has, besides, called upon his people to "respond" to his call and expresses his confidence "that they will respond" to his "call with the same loyalty and sense of responsibility as in the past and in a spirit of mutual toleration and good-will." The turn of the people of this State and of their leaders, sagacious and able, is now come. They must ask themselves how is the Scheme going to work out in actual practice, taking it for granted, that they themselves will, as wise people and true, adopt a practical and far-seeing attitude in regard to their new rights and responsibilities?

We feel we cannot conclude this all too brief a review of the Scheme of Reforms announced without a word of commendation to the excellent work done by the Reforms Committee headed by Dr. Brajendranath Seal. Dr. Seal's reputation for scientific scholarship has been greatly enhanced by the Report which he has been instrumental in issuing. It not only sustains his reputation as a philosophical historian, but also marks him out as a political scientist of a high order. That his proposals have practically been adopted *in extenso* by the Government of Mysore shows that the faith placed in him by His Highness' Government has been fully justified. Nor can we omit to add our meed of praise to Mr. Banerji, the Dewan of Mysore, who has brought to bear his practical statesmanship in giving final shape to the Seal recommendations and to pushing through the Scheme in all its stages and making it possible for the new Assembly and Council begin their work without delay. His administrative experience has stood him in great stead in this matter. He has demonstrated that it is possible to evolve a scheme of reform in a larger Indian State which is compatible with modern democratic ideas of advance while not violently departing from time-honoured and Treaty-bound Kingship, founded partly on theocratic ideals and partly on political accretions of a later age. Finally, we feel it our duty to state that the highest tribute is due to H. H. the Maharaja who, as a token of his goodwill towards his subjects, has inaugurated the new Constitution in Mysore. His love and affection for his People is too well known to need mention here. What he has given, it is the bounden duty of his subjects to make the utmost use of. He has done his part; it is time for the People, his subjects, to act in a manner becoming their position and reputation. They would do well to remember that no philosopher's stone of a Constitution can produce gold out of lead; it is the character of a Nation that determines its Constitution.

Francis Bacon.—If a man will begin with certainties, he shall end in doubts; but if he will be content to begin with doubts, he shall end in certainties.

Burke.—All Government, indeed every human benefit and enjoyment, every prudent act, is founded on compromise and barter.

Burke.—Government is a contrivance of human wisdom to provide for human wants. Men have a right that these wants should be provided for by this wisdom.

Carlyle.—Do the duty that lies nearest thee, which thou knowest to be a duty. The second duty will already become clearer.

Coleridge.—A man of maxims only is like a Cyclops with one eye, and that eye placed in the back of his head.

Dickens.—The bearings of this observation lays in the application on it.

Disraeli.—The divine right of Government is the key-stone of human progress, and without it the Government sink into police, and a nation is degraded into a mob.

Disraeli.—A majority is always the best repartee.

Disraeli.—Individuals may form communities, but it is institutions alone that can create a nation.

George Eliot.—It's them as take advantage that get advantage i'this world.

Emerson.—The sum of wisdom is, that the time is never lost that is devoted to work.

Emerson.—The difference between landscape and landscape is small, but there is great difference between the beholders.

Johnson.—He that raises false hopes to serve a present purpose, only makes a way for disappointment and discontent.

Milton.—Methinks I see in my mind a noble and puissant nation rousing herself like a strong man after sleep, and shaking her invincible locks. Methinks I see her as an eagle mewing her mighty youth, and kindling her undazzled eyes at the full midday beam.

Mysore Constitutional Reforms.

Some Press and Other Opinions.

The Times.—The franchise is to be considerably extended. The existing property qualification is to be reduced by one-half in the case of voters for the Assembly, and women possessing the qualifications prescribed for voters are to be enfranchised. The powers and functions of municipal councils and local boards will be revised so as to give the largest measure of autonomy in the administration of local affairs.

Manchester Guardian.—The State of Mysore now contemplates what is generally considered to be the most decisive step yet made by an Indian State toward the ideal of self-government.....There are several points of interest in the composition of the popular Assembly. The majority of the 250 members will be elected by the various rural and town constituencies, but provision is also made for the representation of special interests, including law, labour, university and industry, and of minorities. There is a decided prejudice among certain classes against anything that savours of communal representation. The report states that "the majority of the Committee are against communal electorates." The proposal for the representation of minorities will, however, undoubtedly work out as pure communal representation. The proposal is that representation shall be given to any community standing in need of it, be it Mohammedan, Christian, or Panchama, "not by virtue of its being governed by a definite body or corpus of personal law, but only in so far as it is a body likely to be swamped at the polls." If it proved that a body of people was not represented in the ordinary way, they could, if they numbered at least 20,000, claim to have a representative nominated. The Mohammedans have tried to get a definite proportion of seats allotted to them, but the Government will not consider the proposal, though it is recognized and acted on in British India.

The Bombay Chronicle.—The proclamation of H. H. the Maharaja of Mysore inaugurating a new era of constitutional government is not of a character to satisfy the people of Mysore. Since the Seal Committee issued its report the Mysore Government had many opportunities of gauging public feeling and the many representations that were submitted by various pubic bodies and the conferences that were held for discussing the merits and demerits of the Report ought to have brought home to them the extent of public desire for a really genuine form of constitutional government. The proclamation, which leaves the details of the new machinery to be worked out by the Government, sets forth merely a skeleton of the reforms, leaving the rest to be filled up by the executive. The whole "gift" is grudging and betrays distrust of the people. If the Representative Assembly having forty years' experience behind it, has been the success that it is represented to be both by the Maharaja and the Dewan, then why make it an advisory body only, having no legislative power? Was it for giving the Assembly the barren status of mere consultative body that so much time was spent in announcing the Reforms and the public was kept in a white heat of expectation and anxiety?

The Bengalee.—It is well said that the worth of a scheme of political reforms will depend not upon its theoretical conformity to an accepted ideal, but upon the practical good sense and alertness of the people who will have to work it. It will be in the power of a wise and energetic public to extract much that is good from even small reforms whereas an ignorant and apathetic public will not be able to benefit appreciably even from very liberal reforms. It will be for public men in Mysore to use to the full all the powers and opportunities that the new constitution will allow and to justify the demand for more Where public opinion is well-informed and vigilant, the people will not long have to wait for political power.

The Hindu.—One thing the document makes clear—that the Government, in considering the question, were actuated by a genuine spirit of pushing forward the progress of political reform. Not that the scheme as finally adopted will wholly satisfy the progressive people of Mysore. Indeed, the Regulations are but in the main the Seal Committee's recommendations clothed in legal form; and these recommendations, it is now well-known, have not been received with any exhuberant enthusiasm in Mysore. But there are one or two points in regard to which the Government have been perhaps more generous than the Committee. The Committee, it will be remembered, sug-

gested a strength of 250 members for the Representative Assembly, 50 per cent of which were to be elected. The Government, while accepting 250 seats as the normal number, have taken power to increase them up to 275 "for the purpose," we are told, "of removing inequalities, if any, of representation and in order to meet the demand for the representation of constituencies that may develop in course of time." The increased number includes seats to be ear-marked for such communities as fail to secure the number of seats due to them proportionate to their population, literacy, etc. For, in Mysore, the problem of the representation of minorities is to be tackled, not through the device of communal electorates, nor even through that of reserved seats, but through the device of "guaranteed" seats. This does not mean the giving up of "facultative representation through associations." It means but an application thereof.....We notice no other striking departure in the composition of the Assembly from that laid down in the Seal Report. There will be no official members as such on the Assembly, though, as the Seal Report recommended, officials will sit and take part, though not vote, in the proceedings. The departures from the Seal Report in regard to the powers of the Assembly are not more serious than those in regard to its composition. The Government have been pleased to increase the permissible number of interpellations and resolutions by a few more than what the Committee fixed but in other respects we see no advance on the Seal recommendations. The Assembly is, we gather, to be fully and wholly consultative and the fact that a series of complicated restrictions have been placed on its powers of initiative only emphasises its consultative character. Unfriendly critics might even call it a glorified Durbar and there is little in the Regulations wherewith one could satisfactorily rebut such a view. We note that the resolutions and even interpellations for its session are to be selected, not by a Standing Committee, as the Seal Report recommended, but, as at present, at a meeting at the headquarters of each district to which the Assembly members will be summoned. The right of moving resolutions is, one notes, distributed with mathematical accuracy among the districts—for the member for Bangalore, say, 4, for Mysore 3, and so on! This device may prevent larger questions being ignored in preference to local ones and the abler members being left to be content with doing little or nothing at all; and, we are told, in addition, "subjects of a purely local character will not be ordinarily included..but will be referred to local bodies!" In regard to the Legislative Council, we note that "to ensure a decided non-official majority," the Government have decided that the proportion of non-official members should be not less than 50 per cent as against the 50 per cent recommended by the Committee. The strength of the Council will be 50 of which 22 will be elected. The principle of guaranteeing seats will be kept in view in making nominations. Otherwise there is no change in composition. As regards powers, the Government have, rejecting the Seal recommendation, refrained from power to legislate, over the head of the Council, to safeguard the safety and tranquillity of the State expressly depending on "the co-operation" and "the sense of responsibility" which characterised the Councils' work in the past and on the reserve power vested in the sovereign to make whatever laws he deems fit. Official salaries, too, Government have refrained from excluding from the votable items on the budget. On the whole, both in regard to the Assembly and the Legislative Council, Government have followed the Seal Report. That is to say, while the present measure is a distinct improvement on conditions in the past, public opinion in Mysore will still feel that full justice has yet to be done to its aspirations.

New India.—We regret to note that, in the Mysore Reforms just promulgated by His Highness, the President of the Representative Assembly as well as of the Legislative Council is to be the Dewan, who is the head of the Cabinet. In him are vested large powers to over-ride the wishes of the Legislature, as the Executive is not removable or responsible to it. To make him regulate the debates in the Assembly and Council is not likely to enhance the status of these bodies or promote free expression of views in them. The Mysore Durbar would have done better to follow the precedent set in British India which has proved an unqualified success.

New India.—His Highness the Maharaja of Mysore has, after elaborate enquiry and consideration, granted a new Constitution to his State which it is the duty of his subjects to utilize to the fullest extent and in the best manner possible, and we echo his desire that these measures now introduced would "promote the happiness and prosperity and ensure the progress" of the people of Mysore. The

Reforms, which are analogous to those in British India, have assuredly greater chances of success because the Executive Government consists of those who are of the people and not aliens, and is responsible to a Ruler who lives among his subjects, not to an electorate six thousand miles away. In the natural course of things, therefore, the new changes ought to result in greater good to Mysoreans than those in British Indian Provinces. There is no diarchy, as the powers of the Legislative Council correspond to those possessed by the Indian Legislative Assembly, and thus friction in the seat of authority cannot arise. There is, of course, complete absence of the principle of Responsible Government in the scheme now promulgated, but that has got to wait, it will be said, till the electorates are educated and their representatives show that they have made full use of the powers now entrusted to them. The Constitution and the powers of the Representative Assembly and the Legislative Council are subjects which neither of these bodies can discuss or affect under the Scheme; but it depends upon Mysoreans themselves, by the sense of responsibility, capacity and patriotism they exhibit in the discharge of their duties, when the Durbar confers Responsible Government upon them, the Maharaja, by a self-denying ordinance, out of his love and affection for his subjects and in his exalted desire to give a lead to his brother Princes, assumes the role of a purely constitutional sovereign. The Scheme, it should at once be acknowledged, is on the whole simpler and more liberal than that recommended for adoption by the Seal Committee, indicating that the agitation carried on by Mysoreans has been of material assistance to the Durbar in finally drawing up the Constitution.

Madras Mail.—The Mysore Reforms, made public by the Proclamation of HIS HIGHNESS THE MAHARAJA at the close of the Dusserah Assembly just concluded in Mysore, impress us by their thoroughness, by the closeness of their connexion one with another, and by the evident sincerity of their purpose to weld the hearts and political actions of the people with their Ruler.....We note the moderate, yet dignified and sufficient, statement that is made to the effect that H. H. THE MAHARAJA retains his prerogative to make and pass Regulations independently of the Legislative Council, if circumstances arise to call that right into action. There are a few in the State who loudly declare that the Reforms are too meagre, and talk as if the announced changes had been wrung by public outcry from an unwilling Government. We do not think that such would have been satisfied with anything but such arrangements as would have brought themselves into power and place; and His Highness' Government can afford to ignore the very few malcontents, though their voice is vicious and annoying to those who have real business to do. We believe that the body of the people of Mysore are to a remarkable degree in good fellowship and harmony with the Government of their titular Ruler: the Reforms have been made on the initiative of the Government itself, and they have had the advantage of the fact that there has been no need to rush them into ill-considered publicity.

The Indian Social Reformer.—The proclamation has only reiterated, in different language, the trusteeship theory; but the high level of public spirit, which is due not a little to the benevolent character of the present Maharaja, makes us sanguine that in the very near future the people of Mysore will demand real control over the administration. .....The Mysore Reforms are, however, not without some redeeming features. Unlike British India, there is no ruling class as such in Mysore and significance of this fact is conspicuous in the clause relating to the powers in respect of measures required for the safety and tranquility of the State. The following is in refreshing contrast to the provision made in respect of the budget: The co-operation that the Government have received from the Legislative Council and the sense of responsibility which has characterised its deliberations in the past justifies the Government in the belief that, when the safety and tranquility of the State requires it, the necessary measures of legislation will be passed by the Council.

The Daily Post.—The above summary of the new constitution, powers and functions of the Assembly should serve to direct public attention to the new value which it is proposed to give to the opinions and wishes of this body, and the Assembly, it may be hoped, will in future increasingly embody the will of the people and so exercise considerable influence on the work of the Administration.

The Daily Post.—To sum up, the features of the reforms which we have described do carry constitutional development farther than has hitherto been the case. It may be that

the scheme falls short of popular expectations and aspirations and that it lacks the full essentials of a system of responsible government. But it is plain that the establishment of any such system of government presupposes the existence of an electorate not only sufficiently large in numbers, but, capable of exercising control over those who seek its suffrage. Such an electorate is certainly not yet in sight in Mysore.

The New Mysore.—The constitutional developments decided upon by His Highness the Maharaja have now been announced and while conceding that His Highness has been actuated in considering the question by a genuine spirit of accelerating the pace of the political development of Mysore, it must be pointed out these changes have belied the just expectations of the people and follow, in the main, the Seal Committee's recommendations.

The New Mysore.—For our part we are not enamoured of the changes, as they are ; our own leanings lie in the direction of popular Government, in other words a system of Government the leading feature of which is that the executive is amenable to and controlled by the elected Councils. But, it should be noted that constitutional advances in this direction require and presuppose the existence of an enlightened popular opinion for which we hesitate to make a claim in the present backward condition of education in the State. While, however, we do not doubt that the present development will promote the progressive spread of education and thereby enable the people to prove their capacity for responsible Government, we cannot help admitting that they are not at present ready. And with that final remark on the subject of Mysore Reforms we have done.

The Mysore Chronicle.—We can safely say that the constitution now proclaimed forms a distinct advance on what existed before. .....We would earnestly appeal to the first class of men not to throw cold water on the legitimate aspirations of the people, to the second class not to be carried away by an overzeal to push forward their own theories and cause discontent and to the third, not to sit quite contented with what is given, but to agitate to get more. We have every confidence that if Mr. Banerji will only be as liberal in his interpretations of the statutes as he has spoken the other day, he will have laid the foundation of larger Mysore.

The Mysore Chronicle.—What is essential to the country and the people must be got, welcoming what is granted, with the conviction that a second instalment awaits us. Our demands must be reasonable, but not extravagant.

The Vokkaligara Patrike.—There is a general feeling that the reforms recently announced are inadequate. This should not stand in the way of our co-operating with Government in working the scheme successfully so that we may secure more progressive measures in the near future. The ryots form the bulk of the voters and most of them are illiterate. They should be educated to realize the full value of the franchise and the duties and responsibilities of the members they return to the Assemblies before voting for any candidate. The additional powers in *re* to the levy of fresh taxes and new legislation granted to the Representative Assembly, have enhanced the status and prestige of the Assembly. It is therefore essential that the candidates voted to the Representative Assembly should be those, who have earned the confidence of the masses by their devotion to public welfare and who possess a personal knowledge of rural life. Thus alone can the Assembly serve the purpose for which it has been inaugurated. Otherwise, instead of improving the lot of the people, matters will deteriorate.

Vrittanta Patrike.—We welcome with great enthusiasm the newly announced reforms that were inaugurated to show the true way to future representative Government. There is, no doubt, an extreme opinion demanding full representation in the country. But this opinion is bound to be disappointed. Others think that even these new measures of reforms inaugurated one not deserved in the present state of the people. They are apprehensive as to what would happen under the present constitution. But the sane opinion in the country and the majority of the people are very grateful for this measure of representation in the Government of the Country.

United India and Indian States.—We entirely associate ourselves with His Highness' exhortation to his people to utilize the larger opportunities for public service and usefulness to the State now thrown open to them. We are sure that his appeal "that they will respond to his call with the same loyalty and sense of responsibility as in the past, and in a spirit of mutual toleration and good-will," will find a hearty response from those to whom it has been addressed.

Sir P. S. Sivaswami Iyer, K.C.S.I., in *New India.*—There can be no doubt that the proposed composition of the Legislative Council is only a feature of the transitional stage and is bound to become more liberal in the near future. Without endorsing all the statements of the Committee about the merits of a Unitary Constitution and the Unitary Sovereignty of the head of the people, there is some force in the observation that the conditions of an Indian State differ largely from those in British India, and that in the absence of any inherent antagonism of interests between the rulers and the ruled, there should be less occasion for jealousy of the Government in an Indian State. This is, perhaps, more true of the Mysore State than of other Indian States. The enlargement of the powers of the Legislative Council is very much on the lines of the recent Constitutional Reforms in British India. The power of voting on the Budget and the curtailment of the list of excluded subjects mark an advance in the position of the legislature. The most interesting features, however, in this part of the Committee's Report are the reservation of the sovereign's direct law-making power and the discussion of the position of the Indian States in relation to the Government of India in the future. The reservation of an independent power of law-making to the Government is necessary with regard to the excluded subjects and follows the analogous provisions of the Government of India Act with reference to the power of making emergency ordinances and enacting measures required for the safety, or tranquility of the State. But, over and above these reservations, there is a special reservation of the prerogative of the sovereign, to pass regulations independently of the Legislative Council. Advances in the direction of Popular Government are usually accompanied by restriction of the sovereign's prerogative. The necessity for this reservation is very doubtful in view of the ample powers reserved to the Government as such, and it is not satisfactorily established by the appeal to theory contained in paragraph 207. It is to be hoped that the power thus reserved will fall into disuse as the Legislative Council fulfils the expectations formed of it.

[It seems necessary to add that Sir P. S. Sivaswami Iyer's criticism is on the Seal Committee Report and not on the Scheme as finally announced in the Proclamation and the two Regulations giving effect to it. —Ed., *M.E.J.*]

"V. V. S." in the *Servant of India.*—It must be admitted that the present instalment of changes means a substantial gain from the point of view of the sober reformer. The advance is mainly in four directions: (1) The Representative Assembly, by being invested with powers of voting and dividing, acquires a corporate character which it hitherto lacked. Till now it was simply a gathering of unorganized individuals, each working on his own hook. Hereafter the Assembly will speak with one authoritative voice and therein will be the source of its strength and influence. Its field of operations is also extended so as to include legislation and taxation and its responsibilities have been enhanced though its voice is not to be decisive or compelling immediately. (2) The Legislative Council will have some more formal and more effective share, than the Assembly in the power of the purse which of course will include taxation. Its numerical strength is augmented, which means that the Government will have to stand a great deal more of heckling. (3) There will be opportunities for members of the two Houses, through Standing Committees, to acquaint themselves at first hand with the problems and the difficulties of practical administration. The insight which is thus to be acquired is an essential qualification for non-officials who would hold places in the Executive Council. Incidentally, the Committees may also serve to enable popular representatives to influence the course of daily administration. (4) The local bodies will have more work for their hands and more power to their elbows. It is a truism now-a-days that in institutions of local self-government lie the roots of a healthy and growing democracy; and the emancipation of our municipalities from official leading-strings should, therefore, be hailed as the opening of a great opportunity for the development of genuine public spirit. Such is the import of the Reforms announced by Mr. Banerji; and it need scarcely be said that his scheme is not meant to last for ever. How soon it will change for the better will necessarily depend upon how well the people will utilize its present provisions. In planning these changes, the Government of Mysore appear to have been guided more by the State's political experience of the past as well as the present condition of public spirit in the State than by external analogies and *a priori* arguments. The question has been asked in some quarters why there should be a Representative Assembly at all and why,

if it should be, it should not have a non-official president. The answer is that the Assembly has been performing some important extra-constitutional functions and that the admixture in its composition like the flexibility of its methods of procedure is a useful feature of that body. Besides acting as a critic of Government and an exponent of the popular mind in regard to legislation and other formal business of administration, it has been a kind of intermediary between the Government and the subject. It acquaints the Government with the every-day grievances and wants of the people and tries to secure their redress in an informal way. If the Dewan or the head of the administration is there as its President, the members will have the advantage of meeting the Government face to face and bringing home the people's difficulties to its mind. The heads of Government Departments could study the people's mind at first hand and secure for themselves much useful information by questions and cross-questions put to members. Forty years' experience has proved that the arrangement is valuable from the view-points of both Government and the people ; and many concrete problems of administration are being easily disposed of year after year by means of such *quasi-formal* conversations held in the Assembly. Mother of all popular institutions in the State, its privileges and conventions are of no less use to the people than the more formal powers and the stricter proceedings of the Legislative Council. It is well said that the worth of a scheme of political reforms will depend not upon its theoretical conformity to an accepted ideal, but upon the practical good sense and alertness of the people who will have to work it. It will be in the power of a wise and energetic public to extract much that is good from even small reforms, whereas an ignorant and apathetic public will not be able to benefit appreciably even from very liberal reforms. It will be for public men in Mysore to use to the full all the powers and opportunities that the new Constitution will allow and to justify the demand for more. Where public opinion is well-informed and vigilant, the people will not long have to wait for political power.

Politics in Brief.

Emerson.—The wise man is the State.

Sidney Smith.—All great alterations in human society are produced by compromise.

Junius.—The right of election is the very essence of the constitution.

Old Testament.— (1 Samuel, 4, 9.).—Be strong, and quit yourselves like men.

Herbert Spencer.—Political changes should never be made save after overcoming great resistance.

H. Clay.—Government is a trust, and the officers of Government are trustees ; and both the trust and the trustees are created for the benefit of the people.

D. D. Field.—Government is the greatest combination of forces known to human society. It can command more men and raise more money than any and all other agencies combined.

Count Arnim.—Government must always be a step ahead of the popular movement.

Macaulay.—Governments exist only for the good of the people.

Wendel Phillips.—Governments exist to protect the rights of minorities.

Emerson.—Governments have their origin in the moral identity of men.

Abraham Lincoln.—Government of the people, by the people and for the people, shall not perish from the Earth.

Carlyle.—States are to be called happy and noble in so far as they settle rightly who is slave and who free.

Tennyson.—Statesmen that are wise, shape a necessity as sculptor clay, to their own model.

Emerson.—The essence or peculiarity of men is to comprehend a whole.

Ruskin.—The finer the nature, the more flaws it will show through the clearness of it ; and it is a law of this universe that the best things shall be seldomest seen in their best form.

Carlyle.—The finding of your able man, and getting him invested with the symbols of ability, is the business, well or ill accomplished, of all social procedure whatsoever in the world.

Theodore Parker.—Politics is the science of exigencies.

Montesquieu.—Political liberty is to be found only in moderate governments.

J. S. Mill.—Popular opinions, on subjects not palpable to sense, are often true, but seldom or never the whole truth.

Schiller.—Votes ought to be weighed, not counted.

Schelling.—Man becomes greater in proportion as he learns to know himself and his faculty. Let him once become conscious of what he is, and he will soon also learn to be what he should.

Economic Life in a Punjab Village.

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It is a common place that the study of Indian Economics should begin with the villages. Thanks to the efforts of Dr. Harold Mann in Bombay, of the late Mr. Jack in Bengal and of Dr. Gilbert Slater in Madras, a great impetus has been recently given to the inquiry of actual economic and social conditions of a single or a small group of villages and the volume before us entitled "An Economic Survey of Bairampur" from the pen of Mr. Ram Lall Bhalla, published by the Standing Board of Economic Inquiry, Rural Section, Punjab, is a welcome addition to our stock of knowledge of Indian Economics.

Bairampur, a small village in the district of Hoshiarpur, the Punjab (total area 336 acres of which 240 acres are cultivable and population, 291 or about 60 families) is a sufficiently small area for an intensive method of enquiry. Being situated in one of the spurs of the Himalayas, the soil, naturally fertile, is subject to the action of inundations which add considerably to the uncertainty of cultivation, but in other respects it seems to be a "typical" agricultural village in the Punjab area at the foot of the Himalayas.

The first, and in the opinion of the inquirer, one of the most important economic phenomenon noted in the volume is the fact of smallness and fragmentation of holding and cultivation in the Punjab village. Taking the holdings as actually cultivated by the owners the results are tabulated as follows :—

(*a*)	No. of owners cultivating	less	than	3 acres=37
(*b*)	„	„	„	3—5 acres= 7
(*c*)	„	„	„	5—8 acres=19
(*d*)	„	„	„	8–10 acres= 3
(*e*)	„	„	„	10–15 acres= 1

The fragmentary nature is indicated by statistics on page 37 of the Report. 11.42 per cent of holdings and 41.81 per cent of cultivation consist of 1 to 5 fragments. 29 per cent of cultivation consists of 20 to 30 fragments and 10 per cent of cultivation and 28 per cent of holdings consist of 30 to 35 fragments.

This phenomenon is well-nigh a universal feature in India and several writers, notably Mr. Keatinge and Dr. Harold Mann, have pointed out the evil results. Mr. Ram Lall Bhalla repeats them in the Report under review. Writes he :—"The loss in time and energy involved in passing from one field to another must be great indeed. A proper watch cannot be kept over the fields.... The absence of *pacca* wells is due to the extreme fragmentation of land. A large acreage is not worked for marking off the boundaries." In my view the evils are often exaggerated in most cases, particularly so in the villages of which the village of Bairampur is typical. The loss in time and energy in passing from one field to another is an unimportant factor where most labour is provided by the cultivator himself and where he has nothing else to do. The evils of fragmentation are certainly great where cultivation requires the most intensive investment of capital and labour such as sinking of wells for irrigation, deep ploughing, scientific manuring, costly implements and so forth, but in the village in question, the writer himself admits, that there is little scope for well irrigation, the soil being not suitable, and in places where it is suitable "co-operative" well sinking can get rid of this difficulty. Indeed co-operative and communal efforts can achieve all that is possible in that way. That our farmers are not altogether helpless is proved by the fact that two *pacca* wells have recently been sunk by a few families jointly on co-operative lines in the village of Bairampur.

The value of implements used in agriculture is Rs. 22–2–0 and the annual cost of replacement is about Rs. 9–8–9. "Improved implements," writes the Report, "are conspicuous by their absence. A Rajput owns a Meston and a Rajah plough. On account of the lack of strong and efficient cattle, the Rajah plough is never worked and the Meston plough is used only occasionally. Ignorance, the extreme fragmentation of holdings and lack of capital and good plough cattle are mainly responsible for the absence of improved implements." It is a fashion with some writers to cry down the immemorial agricultural methods and implements of this country and the country plough is often reserved for special attack. Lack of capital and good plough cattle are no doubt standing in the way, but in those parts of India where deep ploughing is not only not unnecessary but uneconomical it is suicidal to change the light country plough.

The principal crops grown in the village are wheat, maize, cotton and sugarcane. The cultivators are alive to the necessity for rotation of crops and green manuring by means of san hemp grown in the field itself is not unknown.

The chapter on rent, wages and prices, though short, is interesting. The total cultivable area of Bairampur in 1918-19 was 240 acres and of these 87 acres were cultivated by tenants of various kinds of which only 14 acres were cultivated by tenants on a cash basis. The cash rents range from Rs. 24 to Rs. 37 per acre. In the case of rents in kind the men shared half the produce including straw. Occasional labour is paid at the rate of 6 to 7 annas per day, but wages in kind are also common ; for cutting the corn wages are invariably paid in kind. The carpenter, smith, etc., are entitled to a small share of the produce at the time of the harvest besides other "customary dues" on all ceremonial occasions.

A good deal is made in recent years of the beneficial effects of the rise in price of agricultural produce. We commend to our readers Mr. Bhalla's conclusion in the matter:— "The large land-owners have profited a lot by the rise in prices. The sales of the surplus yields have made them prosperous. The small owners have suffered. The commodities that they used to purchase are being sold at higher rates and they neither have, nor had before, large surpluses to sell. This is especially the case with the Rajputs at Kutabpur, whose produce has not increased, who in normal years too hardly produced enough to make the two ends meet and whose standard of living is the same as it was before the war ; these and such like have suffered terribly and their debts have greatly increased." (Page 86.)

The Punjab village is different from other villages of India in that the Punjab Land Alienation Act sets a limit to the borrowing capacity of the cultivator. The total debts of the village, mortgage and personal, amount to Rs. 9,911 or Rs. 34.07 per capita or Rs. 165.2 per family, of which the mortgage debts alone come to Rs. 5,150. Of the loans on personal security, the following are the chief purposes:—

(1) Purchase of cattle	.. Rs.	1,065
(2) To repay old debts	.. ,,	720
(3) Celebration of marriage and other ceremonies	.. .. .	579
(4) House building	.. .. ,,	380
(5) Payment of land revenue, rent, etc.	.. .. ,,	300

The village is fortunate in having a strong and successful Co-operative Credit Society, but 70 per cent of loans are from outside money-lenders. The causes are instructive. (1) The cultivator is still under the impression that if he does not pay back the money borrowed from the Society, on the due date, even if his crops fail, his estates and everything he possesses will be sold. (2) The chief cause lies in the fact that the money borrowed from the bank is borrowed openly and, therefore, nearly every one knows of a person's indebtedness to the Society. (3) When an intelligent cultivator finds that he must borrow openly, or borrow a large sum, he prefers to mortgage his land to the taking of a loan. The results of the working of the Land Alienation Act are thus summarized in the report : "As a remedy it has failed, as a corrective it has been a complete success. It has failed to save and protect the poor and helpless cultivators ; land is still passing out of the hands of the poor into those of the rich .... It has also resulted in the creation of a new class of agriculturist money-lenders. It has saved those for whom there was a chance of being saved and who wanted simply time and opportunity to get out of the clutches of the money-lender. In the case of the heavily indebted and helpless cultivators, they would certainly be better off if there were no Act, for they would then be able to sell their lands to the highest bidder. The cultivator who is well off is not affected by the Act one way or the other." (Pp. 110—111.)

The Report proceeds to give the details of the cost of cultivation of the several crops in Chapter VIII and a short account of the live-stock in Chap. IX.

Chapter X deals with certain interesting details about the problems of population in a Punjab village. The total population of Bairampur was 291 and the number of families 60 ; the average per family is therefore 4.8 members. They are mostly Jats and Rajputs. Among the Jats a large number of males remain unmarried (according to the statistics, for 44 men there are only 19 women). After referring to the decrease in population in recent years, the Report proceeds to point out that scarcity of women alone does not seem to be the sole cause. "There is another economic factor working at the root, sometimes and that not rarely, the Jat himself consciously observes celibacy with the avowed object of maintaining a higher standard of living than others." Thus the so-

called Malthusian check is in operation at least among the Jats in the Punjab.

The Report concludes with a study of a few family-budgets. The sole source of income is from land. A *Jat* family consisting of two brothers, 1 woman and 2 children owning about 14 acres of cultivable land, has a net income of Rs. 667, while the average annual expenditure amounted to Rs. 836. Deficit Rs. 169. A *Gujjar* family consisting of 1 man, 1 woman and 2 children owning 1.5 acres of land as an occupancy tenant, but cultivating about 6.5 acres, got an income of Rs. 340, and the expenses amounted to Rs. 406. A *Chamar* family (1 man, 1 woman and 4 children) got an income of Rs. 227 and the expenses consumed the whole.

It is obvious that most families live a hand-to-mouth existence, and the margin for saving, if any, is very small. A periodical famine or dislocation of the primary industry would mean starvation, while the necessary capital for agriculture is got together only with extreme difficulty. In the words of the report: "Such a study undoubtedly reveals poverty, perhaps not of a distressing and grinding variety, but sufficient to cause the legislator and the economist alarm. In the rapidly changing conditions of the present, unless the public and the Government are wide awake and give every assistance to the cultivating masses, the sweeping economic and social changes now in progress may be disastrous to the average cultivator."

Paper from Bamboo.

Mr. H. K. Richardson writes in the *Chemical and Metallurgical Engineering* (China) as follows:—

Many different kinds of paper are made in the Western Provinces of Szechuan and Kweichow (China), of which four are of particular interest. These are:

1. Kou pi chih, or bark paper, which is made from the paper mulberry, probably the original paper made in China.
2. Rice paper, so called, which is sliced from a pith.
3. Ts'ao chih, or coarse paper, made from rice straw or reeds.
4. Chu chih, or bamboo paper, made from young bamboo trees.

Each of these papers is made by a method more or less distinctive, but chu chih is the most interesting.

The best paper produced in Szechuan is made from bamboos by a process said to be over ten centuries old. More than thirty varieties of bamboo grow in Western China, of which only two are commonly used for paper making. These are tzu chu or spiny bamboo, *bambusa arundinacea*, and ch'ung chu or grove bamboo, *phyllostaclys heteroclado*. The second is used by most paper-makers.

The process used to turn this bamboo into paper varies a little in the different parts of the province. The process, as it was observed in the district along the Chengtu-Wanhsion Post-road, will be outlined here.

The bamboo is cut into eight-foot lengths and other split length-wise into eight parts. The split cane is laid in pits with alternate layers of lime, about 10,000 catties of bamboo with 1,000 catties of lime making up a charge. The matted bamboo is weighted down with stones and covered with water, in which condition it is permitted to stand for two months. The bamboo is then removed, washed and soaked for two months in the clean water to bleach out the lime. The water is drawn off and the mass permitted to rest in this moist condition for two months, after which it is hammered to a pulp in a mortar or stone mill and finally is rubbed to a fine pulp in a stone through by stamping under foot. This pulp is mixed with cold water and mucilage in stone vats, after which it is dipped out on hand frame where are stacked in a press and pressed semi-dry. The sheets are dipped singly into rice water and are then dried on the side of a hot kiln.

Hosie and Wilson, describing the same process, state that the first reduction of the fibre is done in the vats with wooden rakes. They also state that 1 to 3 per cent of the soda is added to the slaked lime in the retting process. It is known that caustic soda is sent to the Chungchow and Mienchu districts for paper making by importing firms. This use may account for the fact that the paper from these districts is whiter and better than that from the other districts. Probably a much larger amount of caustic would be used if the $200 a ton freight charge and the extra importing commissions did not make the price almost prohibitive.

Manufacture of Matches.

By Dr. S. S. Aiyar, B.A., M.Sc., Ph.D.

It was over ninety years ago that the old sulfurated phosphorous matches were put on the market and since then the match industry has progressed by leaps and bounds both from the mechanical and chemical standpoints. The sulfurated phosphorous matches, owing to legislation against the use of white phosphorous, have completely disappeared, while the old home industry has given place to the big manufacturing industry. Except in Japan in all other big match producing countries, ingenious and automatic machines have taken the place of man. While the use of these labour-saving and automatic machinery increases the output for unit labour several fold, their erection involves heavy initial outlay. Whether it is of real advantage for us in India to adopt labour-saving systems, where machinery are to be imported and labour comparatively cheap is a question. We have to give work to our labour and not feed foreign labour.

There are two kinds of matches on the market, *viz.*, the so-called strike-anywhere-matches and the safety matches. The former have taken the place of the old sulfurated phosphorous matches and have a head containing phosphor-sesquisulfide as the inflammable material. Both of them are made in the same way except that the strike-anywhere-matches, owing to their inflammable nature, come out of the automatic match machine not quite dry and are filled in boxes by hand.

The safety matches on the other hand contain chlorate of potash in the head and phosphorous (red) in the friction surface of the box. These matches were at first largely manufactured in Sweden and are hence also known as "Swedish Matches".

The match industry divides itself into the following stages :—

(1) Preparation of the wood.
(2) Manufacture of splints and boxes.
(3) Paraffining and dipping of splints.
(4) Painting, filling and packing the boxes.

We shall now proceed for a more detailed description.

Wood and its Preparation.

According to the experience of the match industry Aspen wood is the best for making both splints and boxes. Before the war this wood came mostly from Russia. The war and post-war conditions necessitated the match producing countries to use home woods with the result that now other kinds of woods, *viz.*, Poplar, Willow, Pine and Fir are used. The tropics have also woods suitable for match industry like cottonwood and Eucalyptus. We in India have, according to the investigation of the Forest Departments, different kinds of coniferous and deciduous woods suitable for the purpose.* The wood must be soft and straight grained.

Contrary to the old shaping process, the modern peeling process obtains in almost all factories for the manufacture of splints and boxes. For the latter process the wood must be as green as possible. Dry wood or semi-dry wood may be softened by boiling as in the manufacture of veneers for furniture. But most satisfactory results are achieved by the use of wood felled green.

Stems, anywhere between 10 to 15 inches in diameter, are cut into bolts of required length with parallel faces. These bolts are barked either by hand or a barking machine before they are fed to the peeling machine. The logs are usually out by a cross-cut saw. The barking machine consists of a heavy iron disk revolving in a vertical plane and carries two radial knives which can be adjusted for any thickness of the bark. The log is pressed against this revolving disk while the rotating knives remove the bark. The log is then cleaned by a brush with hard bristles and is now ready for being peeled.

Manufacture of Splints and Boxes.

The prepared bolts are then taken to the veneer peeling machine in which they are fixed as in a lathe. When the machine is set in operation the log rotates on its own axis while the knife system consisting of a heavy horizontal knife and a number of cross scoring knives approaches the log, peeling from it individual strips of "veneer" of the thickness of the stick. The big knife cuts one broad strip of veneer and the scoring knives, in case of box veneer, cut the wide bands into narrow bands whose width corresponds to the length of box veneer. By means of a regulating system of interchangeable cogged wheels the thickness of the veneer may be regulated.

In the case of box veneers, the bands are

* Indian Forest Memoirs, Vol. II, Part I, 1910.

simultaneously scored by a special scoring apparatus so that they can be easily folded on the box machine. The bands are now packed in layers of 100–150 and cut by the box veneer chopping machine into rectangular skillets. For the box three pieces are necessary and all these being of different sizes are cut with advantage in different machines.

The splint "veneers" are similarly packed in layers of 70–80 and cut into splints in the splint chopping machine. These chopping machines consist of a knife or a knife system moving up and down and a feeding mechanism consisting of a regulating device and vertically placed groved rollers. These rollers while holding the "veneers" rigidly, feed the packet regularly to the knife system.

The splints still damp are to be dried and polished. This may be achieved in one of two processes according to the mechanism adopted. The drying chamber in which the sticks are kept on moving, whether of box type or drum type, is heated by steam coils. In big factories the sticks are carried by means of mechanical or pneumatic conveyers to the drying and polishing drum, whence they fall automatically into a conveyer pipe leading to the cleaning and levelling machines, where they are shaken into parallel rows and filled in suitable cases to be transported to the finishing machine.

The box "veneer" skillets are packed in cases and taken to the box-making machines which are differently designed for outer box and inner drawer. These machines fold the scored veneers, paste paper and label the boxes. Their mechanism is somewhat complex. The boxes so made are pushed together by another machine after the parts are dried in a box drying apparatus.

Paraffining and Dipping the Splints.

The next stage in the industry is the manufacture of finished sticks. The sticks are now to receive a head of igniting material the composition of which varies with the manufacturer. Igniting composition for safety matches and strike-anywhere-matches differ in that the former contains no phosphorous or phosphorous compounds. The following materials enter into the composition of a safety match head :—

(1) Oxidising agents like chlorate of potash, bichromate of potash and manganese dioxide.

(2) Filling materials like zinc white, infusorial earth, glass powder, chalk whose purpose is to slow down the speed of reaction.

(3) Binding materials like gum arabic, glue, destrine, gum tragacanth, gum senegal, etc.

(4) Transferring materials like paraffin and sulfur which transfer the flame to the splint.

The ingredients that go to make the composition and their proportion is a question of choice for the manufacturer. Tested recipes can be obtained from the manufacturers of machinery, which may not be suitable for all conditions. A typical composition * is given below :—

(*a*)	Gum arabic 1 part Glue 3 parts	in 12 parts water
(*b*)	Chlorate of Potash	1.3 parts
	Umber	2.5 „
	Glass powder	4 „
	Sulfur	1 „
	Infusorial earth	0.5 „
	Manganese dioxide	0.2 „
	Barium bichromate	.6 „
(*c*)	Chlorate of potash	16 parts
	Colouring matter	A little

The binding material is dissolved in the stated amount of warm water and to it the amount of chlorate of potash mentioned under (*c*) is added. The ingredients mentioned under (*b*) are ground, sieved separately, mixed and added to the mixture of (*a*) and (*c*). The whole is then stirred and ground in a comial-grinding-mill. The composition must have the consistency of a thin paste ; hence too much water must not be used for washing the mill. When ready it is transferred to the composition vessel of the "continuous match machine".

This machine consists of an endless chain carrying metal strips with regular holes. These plates go through a long course. The sticks are fed into the machine where the punching-in arrangement pushes two rows of sticks into the chain plates. This arrangement is double acting and simultaneously pushes out two rows of finished sticks from the returning chain plates. From the punching-in the chain plates go upwards with the splints and again down along the semi-circle, and proceed onwards through the cleaning part sloping upwards over the heating-plate to the paraffining apparatus. The paraffining is brought about by a wide up and down sliding grove, by means of which the depth of dipping can be regulated. An after-heating plate keeps the sticks warm in their onward course so that the paraffin soaks into the wood. By means of special arrangements,

* These recipes are based on information obtained from the "Badische Maschinen Fabrik".

which vary with different machines, consecutive sections of the moving chain plates, may be made to remain stationary periodically to receive the paraffin and head-composition. By means of a table system with self-acting up and down motion, the sticks receive the composition and then they take a long course where they get dried by ventilation and heat. The sticks are pushed as they reach the punch-out arrangement and are collected in cases to be transported to the box-filling machine. In cases where a box-filling arrangement is attached to this machine, the sticks come out filled in boxes.

Filling, Painting and Packing the Boxes.

It remains now to fill the boxes which is done by the box-filling machine. The match magazine is filled with match and the box magazine with closed boxes (empty). When the machine is started, the boxes are carried on the chain along the oval course to the filling apparatus, while they are opened on the way by a suitable mechanism. They are then filled in the filling apparatus by an ingenious device, 60 sticks in a box, four or six boxes at a time. The filled boxes proceed further, are closed automatically and fall into a transport receptacle. These are carried to the box-painting machine, where they are painted with the friction composition. The machine consists of two horizontally or vertically rotating circular brushes between which the boxes pass through, and two friction disks provided with catches to transfer the friction composition to the brushes.

The friction composition itself consists of red (amorphous) phosphorous and antimony sulphide taken in equal parts and mixed with necessary amount of gum-glue solution and filling material (glass powder and chalk).

After being painted the boxes pass through a long narrow drying chamber and out from it to the packeting machine where they are packed in packets of 10 or 12 as required. The continent of Europe makes packets of 10 for inland consumption.

The packets are then packed in tin or water-proof lined wooden boxes and shipped out.

Strike-anywhere Matches.

These are made exactly in the same way as the safety matches, only with this difference that owing to their easy inflammability they are not allowed to dry out much and are packed in boxes by hand. The chief components of the match head are phosphorous sesquisulfide and potassium chlorate taken in the proportion of about 1 to 4. These are never to be mixed dry. Each is mixed with necessary amount of filling and binding materials like zinc white, glass powder, chalk and glue solution and ground separately in separate mills. The ground pastes are then carefully mixed in required proportions when required. A typical recipe for these matches follows :

Composition 1 :—

Phosphorous sesquisulfide ..	2	parts
Zinc white	1	,,
Glass powder	1	,,
Chalk	0.8	,,
Glue	1.2	,,
Water	3.0	,,
Water for rinsing ..	1.5	,,

Composition 2 :—

Chlorate of potash ..	4	parts
Glue	2	,,
Zinc white	0.5	,,
Glass powder	0.5	,,
Chalk	0.4	,,
Water	3.0	,,
For rinsing	1.0	,,

The preparation of compositions needs particular care and it is always advisable that a chemist handles them in the beginning until the workmen learn work carefully.

We give below a general idea of the machinery required, their cost and capacity.

Machinery and Equipment.

The smallest workable and paying plant equipped with all the machinery referred to above, except the continuous automatic match-making machine, is capable of producing three to four thousand boxes an hour. In this unit the frame system is adopted for paraffining and dipping, the work being done by hand. The capacity of the automatic match-machine being too large for this unit it must be erected only for large size factories. The power needed to drive all the machinery needed for this unit is within 15 H. P. but the personnel required is proportionately larger. All the machinery needed for this unit, without the source of power and transmission systems, cost about rupees 30,000 excluding packing, freight, insurance and duty.

For factories with a capacity of over 40 gross boxes an hour, the continuous machines come in handy. These machines are made in different sizes with capacities varying from 350,000 to 1,250,000 sticks per hour. The smallest machine has a capacity of over 320 gross boxes per day of eight hours. These machines are rather costly, a machine with one million sticks per hour capacity costing about a little over 50,000 rupees. Instead of this, one can use individual machinery for

paraffining and dipping up to 50 gross per hour, and they cost less; but they involve more labour.

To give an idea of the cost of bigger units, we may say that the equipment for a factory of 50 gross per hour costs Rs. 75,000 and that for a factory of 100 gross per hour Rs. 1,30,000.* As already mentioned the prices do not include the costs of power system, freight, etc. It is beyond the scope of this article to give more detailed description of individual machinery or to develop workable schemes. However we give below a list of important machinery needed, their capacities and the power needed to drive them.

Machine	*Capacity*	*Power* H. P.
Cross-cut saw	1,00,000-2,00,000 boxes a day	4
Peeling machine	10-18 millions splints a day	2
Splint chopping machine	15-32 millions a day	0·75
Machine for cutting box veneers	3,00,000-5,00,000 boxes a day	0·15
Splint levelling apparatus	5-10 millions	0·5
Outside box machine	70,000 boxes in 10 hours' day	0·6
Inside box machine	60,000 boxes do	0·6
Continuous box drying apparatus	50,000 to 60,000 boxes	1·5
Automatic match machine	0·35 to 1·25 millions sticks an hour	1·5 to 6
Box-filling machine	50,000 to 60,000 boxes per day	1
Match-box painting machine	One is enough up 100 gross per hour	0·25
Match-box packing machine	20,000 packets a day	0·5

Wherever a range of capacity is given, the power mentioned must be taken to be for the medium sized machine.

A factory with a capacity of 50 gross boxes an hour requires the following personnel and quantities of material.

Personnel.—

1 Manager.
1 Foreman (In the beginning the erecting engineer of the machinery exporters).
1 Mechanic.
1 Fireman.
1 Porter.
1 Night-watchman.
12 men, 6 boys and 20 girls or 26 boys.
For office, one typist clerk and one servant.

Materials.—

Timber	185 c.ft.
Paraffin	100 lbs.
For Paste	75 lbs. flour.
Paper	110 lbs. blue paper in rolls.
	110 lbs. straw-paper or wrappings in rolls.
	80,000 labels (yellow).

Chemicals.—

Glue	15 lbs.
Gum senegal	10 lbs.
Gum Tragacanth	5 lbs.
Dextrine	1 lb.
Chlorate of Potash	72 lbs.
Bichromate of Potash	9 lbs.
Bichromate of Baryta	1.5 lbs.
Manganese-dioxide	2 lbs.
Antimony Sulfide	6.5 lbs.
Sulfur	6 lbs.
Phosphorous red	11 lbs.
Glass powder	20 lbs.
Zinc white	10 lbs.

Silicate earth, chalk, colours—2, 1.5 and 0.75 lbs. respectively

* 40 H. P. will drive all the machinery for this unit.

Conclusion.

We have tried to give a general idea of the modern match industry for the benefit of those interested in this line. Purposely we have avoided technical details which are much too specialised in character.

At present in India, we have to import most of the chemicals we need. This need not deter our capitalists, for no country is absolutely independent for any industry. Sweden which is one of the big manufacturing countries buys most of the phosphorous and other chemicals from Germany. Germany imports match woods from Poland, Lithuania and Russia, paying enormous price. We have also to our advantage the heavy import duty on the manufactured matches. Hence we are of opinion that match industry can easily be established on a paying basis, especially now as Japan has received a set back by the catastrophic earthquakes. In fact this is just the opportune time for this industry to be developed in India.

We must thank here the "Badische Maschinen Fabrik" who have been kind enough to furnish the illustration of the machinery and on whose information the recipes given in this article are based. They specialise in match machinery which are said to be efficient in the experience of the industry.

Cod Liver Oil.

West Indian Committee Circular writes:— There are three processes for the preparation of cod liver oil. In the first, now seldom used, the livers are allowed to rot, the oil rising to the surface; in the second the liver is steamed in a jacketed apparatus until the oil rises to the surface, and in the third, which is the one mainly used in Newfoundland, steam is blown into the liver to break up the tissues, the oil rising to the surface as in the other processes. It is estimated that the cod liver oil is as regards vitamins, 250 times more potent than butter.

Minor Water-Power Stations.

By C. Ramachandra Rao, B.A., B.E., B.Sc. (Lond.)

In our country as soon as one mentions hydro-electric power one generally thinks of the huge Tata schemes or—thinking nearer home—of our State Power-House at Sivasamudram. This aspect of water-power, though a very important one, has been rather too much before the public eye for some time now. These huge power-schemes undoubtedly help towards the industrial development of the country but the considerations of the enormous capital involved often delay the maturing of small profitable schemes. In this article I propose to invite attention to an aspect of water-power development which in future will probably play an important part in the development of the country. This aspect has been brought home to me during my recent travels in Sweden and Germany. It is the development of the small power unit of a few hundred horse-power or under where the power is consumed on the spot or near about in the maintenance of a small industry. The factory is generally in such cases situated on the banks of a river or a canal and a pipe-line is led out from a place higher up the river at a small barrage and the artificial fall thus created, which may amount to a few feet, is used in running a water-turbine and the power thus generated is consumed directly or by an intermediate conversion to electric power, according to the nature of the case.

To cite some examples. The River Brenz in Würtemberg in Germany is a very small tiny stream which has its source in a perennial spring. There are many small and big factories situated on it and almost every one generates at least part of the power it requires by means of an artificial fall created by a small barrage higher up the river. In some cases the power is generated at the barrage itself. The generating station of the well-known turbine and paper-machine builder Mr. J. M. Voith of Heidenheim a. d. Brenz is an example. There is a dam across the river at Hermeringen, about 15 miles from the works, which gives them a fall of nearly 20 feet. They generate about 140 Kilo-volt-amperes continuously. Since their station is connected to the bigger municipal undertakings of the district they can buy from them and sell to them according to some determined arrangement. Moreover, since their factory works only in the day time, the spare power at Hermeringen at night has been used to pump water up a hill 250 feet high at Heidenheim into a tank. This tank is emptied every day through a Pelton wheel, which is coupled to a generator. This power is also used in the factory. This is only one instance of an innumerable number of the kind where power is generated at comparatively little cost. The cost of civil engineering work, which in the big schemes, is enormous, is in these instances within the reach of many an ordinary individual capitalist in this country. There are many paper mills on the same river Brenz, where each mill develops part of the power required by means of an artificial fall.

Such cases abound in Sweden too. That wonderful country is so extremely well developed in hydro-electric power that even outlying farm-houses in the country have electric light and electric power at their disposal. This has been achieved not only by developing power-stations like the Trollhätten, where nearly 170,000 H. P. are generated but by developing countless small power-stations with practically no distinguishing name at all. There are a good many power-stations of appreciable magnitude designed on a fall of only 30 feet or thereabouts. The rapids of a river or an artificial fall created by a dam across the river are made use of in the generation of thousands of horse-power. A typical power-house of Sweden is the one at Forshuvud, where the river is dammed to give a head of about 30 feet and in a portion of the dam towards an end the power-house is located. The power-house in this case consists of two huge vertical Francis Turbines coupled to generators of about 6,000 K.W., each. This power-station, which when fully developed will yield about 18,000 K.W., is one of the three power-stations belonging to an Iron and Steel Company and all the power-stations are situated on the same river within a few miles of each other. Water-power has been used to drive almost any kind of machinery directly in this country. Even such an enormously varying load as a rolling mill has been coupled directly to a Special Francis Turbine in the Steel Works at Hagfors. This shows quite clearly that a turbine can be designed to drive almost any kind of machinery directly.

There are, again, quite a number of power-stations where the power-house is controlled

absolutely automatically from a point convenient to the operator. This point is sometimes miles away. These small plants have thus the minimum cost of maintenance compared to other forms of power-units. In the power-station at Melby, near Atvidaberg, the plant consists of one spiral Francis Turbine coupled to a generator of about 600 H.P. The power is mainly used in a timber-mill a few furlongs away in the day and it supplies a small lighting load for part of the night. There is only one engineer in charge of the timber-mill and power-station and as his presence is necessary at the mill, the controlling switch for the starting and stopping of the turbine is placed in the mill. He is expected to look in whenever he has spare time or once a week to see that the governor and bearings have a good supply of oil. There are many other instances where the power-station is located some miles away from the mill or factory and no living soul visits the power-house except once a week. The starting and stopping of the turbine is absolutely automatically and reliably done.

The visit to such power-stations in Sweden and Germany brought this aspect of water-power development forcibly home to me. There has been so much talk of the huge Tata Schemes lately before the public that this aspect of power-generation has been altogether neglected. One has only to travel in the hill-ranges of the malnad or on the banks of the River Cauvery to find plenty of opportunities for developments in this direction. True it is that the rivers, especially of South India, have a meagre flow in the dry season. But there are also some rivers which have a perennial flow. A power-station which does not cost exorbitantly can be designed on the minimum flow of the river to supply a small industry located on its banks with the requisite power. Opportunities in this direction are of course far greater in the case of the perennial canals. Since the flow is absolutely controlled in these cases, the cost of power-station construction will be at a minimum. It must be remembered that the water that passes through a turbine is again available for its main purpose, that is, agriculture. In a country like Germany, where coal is more abundant and cheaper than in many parts of India, it has been found practicable and profitable to generate power in these small units. Can there be then any doubt as to the success of such schemes in our country, provided they are designed with due consideration to technical detail by experienced water-power engineers? It is of course an obvious fact that no two water-power schemes are exactly alike. Conditions that prevail in our country are quite different from those that prevail in another. Each scheme will have to be developed on its own merits. Now that the Turbine-makers of Europe are opening their branch-offices in India, these schemes can be far more easily and quickly developed hereafter than before, when we were not able to get accurate and reliable information quickly. If we only had a firm of expert Consulting Engineers like the Wattenlyggnads Bureau of Sweden, water-power would have been far more briskly developed than at present. This firm, which consists of some hundreds of engineering experts for every branch of water-power development—geologists, dam-engineers, civil engineers, turbine engineers, power-station engineers, transmission line engineers and construction engineers—has been greatly responsible for the remarkable growth of hydro-electric power during the last fifteen years in Sweden. In this country there is at present no body of consulting engineers for this purpose and it is high time that some engineers join together in forming such a Bureau. When one takes into account that very efficient turbines can be constructed for practically any flow and any head, however small, there is no project beyond the scope of the engineer.

Major D. P. Forman directs attention of Master Printers to a managerial pitfall in an address delivered at Cost Congress in London, May 1923 published in the *British and Colonial Printer* on 'Over-Equipment of Printing Offices'. He says: "If I may say so, it seems to me that we have a certain amount to learn in the matter of organization from the American Master Printers. The American figures for 1921 show that if 100 represents the cost of production of the product of the trade 35 .71 represents the cost of materials, 33.41 represents the cost of wages, and 30.88 represents the cost of the overheads or cost of organization." That is as good as saying that one-third of your costs are fixed, and two-thirds only of your costs vary according to the amount of work you have, and of this two-thirds one part is material. From this, it follows that of the various costs making up the hour rates, approximately one-half is a fixed amount whether the works are full of work or absolutely idle.

The Prague Glassworks are increasing their capital from 2,800,000 to 5,000,000 Cz. crowns.

British Trade Recovery.*

By Rt. Hon'ble R. McKenna.

There is no more difficult task for a people to undertake than the establishment of a government absolutely new. The Treaty of Versailles created many new nations whose subsequent careers have afforded striking examples of this proposition. In less than two years under the guidance of Sir James Craig and his colleagues, who have merited and won the warmest admiration of everyone, you have set up the whole apparatus of government, and experience has already shown that it functions smoothly and well. But what I venture to name amongst your finest accomplishments is that your Finance Minister, Mr. Pollock, balanced his first budget without recourse to loans. Last year's surplus may not be a large one, but there it is, and you may well be proud of it. The world is suffering from an epidemic of unbalanced budgets. Too many nations seem to think that liability for the expenditure they incur can be evaded by refusing to submit to the necessary taxation and rely upon making good any deficit by loans or by recourse to the printing press. It is the primrose path of finance, beginning so happily with high profits and low taxes, good wages and full employment, and ending, when credit is exhausted, with general impoverishment. You have been content with the old-fashioned method of paying your way, and the future stability of your finance is now, I trust, assured.

Importance of Foreign Trade.

Orderly government is a matter which in the main depends upon the character and conduct of your own people, but when we turn to trade we have to deal with conditions many of which are not under your control. Your trade is not merely a matter of production within your own borders and the exchange of your products among yourselves. In normal times your external trade is large and important. Your prosperity rises and falls with the prosperity of Great Britain and of the world generally, and an impoverished and disorganized Europe cannot fail to react upon Belfast and be reflected in unemployment and diminished profits. No country is for commercial purposes entirely self-contained, but you, like Great Britain, are dependent in an exceptional degree upon foreign trade. I do not wish to make too much of this point because in every country internal trade is by far more important, and something can be done by the development of domestic sources of supply and demand to make up for the loss of foreign markets. But any great change from established conditions takes time and is inevitably attended by considerable losses and diminished wages during the process. As is the case with Great Britain you have built up a trade organization of a particular kind, adapted to the world's requirements as they existed before the War. The nature and volume of these requirements were determined by the free functioning of the trade organization in other countries, and whatever shatters or even disturbs this condition has a restrictive effect upon you. If we are to recover the level of activity attained before 1914 we must first of all re-establish throughout Europe the conditions of peace and stability which then existed.

Effects of Ruhr Occupation

I cannot help thinking that there is a good deal of misconception on this subject. While it is admitted that the general unrest and disorganization in Europe are bad for our trade, we often hear the question asked, Do we not gain more by the crippling of German competition than we lose by the sacrifice of a portion of our European market? We hear this in particular from those who defend the French occupation of the Ruhr, and I can well believe there are many people to whom this argument would make a strong appeal. A manufacturer, for instance, who secures an order which under normal conditions would have gone to Germany, would be hard to convince that we are not gainers by the destruction of German trade. But we have to look at the subject as a whole and, if we examine our foreign trade in its entirety, I think we must come to the conclusion that a vital blow cannot be inflicted on a great commercial country without serious injury to ourselves.

I do not propose in support of this opinion merely to refer you to the fact that during the last few months our general trade has been at a very low ebb. You might justly reply that other causes may have been in

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* Part of Address delivered at the Belfast Chamber of Commerce (Oct. 24, 1923).

operation, and that a decline in domestic apart from foreign trade might account for our present condition. I am going to ask you to look at the course of our foreign trade over a period of years. For this purpose I have had prepared a statement of the export trade of the United Kingdom for the ten years from 1903 to 1912, and a statement of the total export trade during the same period of thirty-nine countries, including Dominions and all the principal countries of the world in which regular statistics of trade are published. We may fairly speak of the exports of these thirty-nine countries as world exports.

During these ten years the British proportion of the world's export trade remained fairly constant. The lowest percentage was 13.8, the highest 15.5. In the first year, 1903, the total of world exports was valued at £2,110 millions and the share of the United Kingdom was 13.8 per cent. In the last year of the period world exports had risen to £3,521 millions and the share of the United Kingdom was 13.8 per cent. Thus, while world exports increased £1,400 millions in value, the United Kingdom year by year received its due share of the increase and, as the prosperity of the world grew, the prosperity of the United Kingdom grew with it. We had our rivals and competitors during the whole of this period, but we never failed to get our full proportion of the world's trade.

Britain's Share of Post-War Trade.

Here I have given you an account of the growth of our trade during the last pre-War years. Now I ask you to look at the post-War figures of our exports and again to compare them with world exports. In 1920 our exports were 18.1 per cent of the total; in 1921, owing to the protracted coal strike, they fell to 16.2 per cent; but in 1922 they rose again to 17.3 per cent. I do not give you the actual figures but only the percentage relation of one set to the other, because the immense rise in prices in 1920 and the subsequent fall vitiate for comparative purposes all figures of foreign trade measured in values. Here we see that our proportion of the export trade of the world had risen from 13.8 per cent in 1912 to 17.3 per cent in 1922. The havoc in several of the manufacturing countries of Europe and the crippling of some of our rivals were accompanied by an increase in our proportion of the world's exports from 13.8 to 17.3 per cent. So far, so good. But what of the actual state of our export trade? When due allowance is made for the difference in prices in the years named, we find that our exports were at least 25 per cent less in 1922 than in 1912, and this decline took place notwithstanding the fact that our population had increased during the intervening years by over two millions.

Whoever gives his attention to these figures can draw only one conclusion from them. On balance we lose by a reduction in the total volume of world trade even though the reduction be caused by the collapse of trade rivals. We may obtain, it is true, a larger percentage of what remains, but the final result is to diminish our total exports. We prosper as the world prospers; we decline as the world declines. We ought never to view with indifference the forcible impoverishment of great nations and the destruction of the fabric of their industrial life, and in no circumstances can we do so with impunity.

So much for the effect on our foreign trade of the disorganization and disruption in Europe. The principal cause of the continuance of the unsettlement has been the French occupation of the Ruhr. Those who defend this occupation justify it on the ground that it is a material pledge for the payment of German reparations which would otherwise be evaded, but they do not give any information as to how the payment is to be made. So far, from the point of view of reparations, the policy has been disastrously unsuccessful. Although the pledge has been held for nearly ten months the deliveries of coal and coke, the principal reparation materials, have been only at the rate of about one-fifth of what they were immediately prior to the occupation. But whether the French are right or wrong in their view that the only way to force payment of reparations is by means of a physical hold of the principal centre of German industry, it is obvious that in producing the will to pay they are destroying the capacity. The Ruhr is no longer an asset but a liability, and it will be found that reparations cannot be obtained from a maimed and ruined country.

Britain's Claim on Reparations.

Let us assume, however, that all the difficulties can be overcome and that reparations on a great scale can be extracted from Germany. We have still to settle reasonable terms of distribution amongst the Allies. On this subject the British Government have made an offer; if it erred on the side of generosity, the case is one in which generosity is wise. We have already lost more through unemployment, to which the chaotic condition of Europe

contributes so greatly, than ever we shall recover from the payment of reparations. Our offer, however, has not been accepted and we have, therefore, to reconsider the problem, a problem which, on the French understanding of it, includes the question of inter-allied debts between Governments as well as reparations. In the matter of these debts we stand in the position of both debtor and creditor. As debtors we settled, when called upon, the terms upon which our obligations to the United States Government should be discharged and have begun repayment. We did not think that the payment of a debt incurred for the purpose of winning the war could be made dependent upon the receipt of reparations which are payable only because the war has been won ; and still less did we think that payment should be conditional upon an amount of reparations which no competent authority regards as possible. On the other hand, as creditors we are never likely to forget that the debts are due by Allies and that they were incurred in the effort to achieve a common purpose. If, however, the French hopes are realized and vast sums are in fact obtainable from a defeated country, it seems to me that in the front line of claims upon this money should stand our right to be indemnified for the payment we are now making to the United States.

But let us not be deluded. The true interest of the world is peace. We shall never regain prosperity by the discharge of international obligations the struggle for which embitters the nations and stands in the way of a final recovery. You have in Belfast a great shipbuilding industry which I cannot mention without recalling the name of your most distinguished citizen, Viscount Pirrie. Has shipbuilding benefited by the confiscation and sale of the German merchant fleet ? All dislocation of the ordinary course of trade is injurious to current business, and whether it be German ships or huge Government stocks of linen cloth, to throw them on the market is to distract and cripple trade for a very long period. Active current business is what we need, and we have to watch and guard against all the forces, domestic and foreign, which tend to disturb it. If in spite of all our efforts peace in Europe is not to be obtained, let us turn our attention elsewhere and see if we can in any degree make up for the decline in foreign trade by other developments.

The Burden of Unemployment.

In considering questions of trade and finance the overwhelming fact which we ought never to leave out of sight is that we have a million and a quarter unemployed. If I speak of unemployment only from the economic point of view believe me that it is not from any lack of sympathy with the human side of the question. We are discussing now economic remedies and we have to look at the nature of the problem on its economic side. The direct burden upon us of this most exceptional degree of unemployment is enormous. It is estimated that the cost to the State and the local authorities is £100 millions a year The true loss, however, is far greater. A million and a quarter men and women are in unproductive idleness instead of at work producing goods. If they could be brought back into employment what an immense increase it would mean in the demand for consumable commodities. They would be earning wages the expenditure of which would be equivalent to opening up a new market with a purchasing power of well over £100 millions a year. The depression would slowly but steadily pass away. Once we can make a serious inroad into our figures of unemployment a revival of trade will come of itself.

Where then shall we look for a remedy ? The Prime Ministers of the Dominions are now conferring with our own Ministers on schemes for the development of Imperial trade, a development which we should all heartily welcome though we might not all be of one mind as to the precise method to be pursued. But the expansion of the markets of the Dominions cannot be rapid enough to deal with the present situation as promptly as the urgency of the case demands. We have great expectations of Imperial trade, but we recognize that it is a matter for the long future. On the other hand it must be agreed that we cannot look for any substantial improvement in foreign trade while Europe remains as it is. Where then are we to turn ? We are driven back upon ourselves. If remedy at all is to be found we must seek it in the growth of our own internal trade.

Here I am confronted with a preconception which it is difficult to remove. The inhabitants of an island were once wittily described as living by taking in each other's washing. It was a most unfortunate phrase as by a false association of ideas we are apt to apply it to any proposals for internal development. There is in truth no real distinction between internal and external trade. A year ago your trade with Southern Ireland was internal.

To-day your trade with Southern Ireland is external. It is just a matter of territorial limits, customs barriers and Government regulations. It does not touch the vital essence of trade, which is the exchange of goods and services for goods and services wherever produced or wherever rendered.

THE STIMULATION OF INTERNAL TRADE.

External conditions, then, being as they are, the question is, How far is it possible for us to have any improvement in internal trade? It is a difficult problem and I do not wish to dogmatise upon it. Perhaps we can throw some light on the problem if we look at what has happened recently in the United States. In the autumn of 1921 the trade depression in that country was exceptionally acute. The officially accepted estimate of the number of unemployed at that time reached the unprecedented total of five millions. Eighteen months later it was reported that the whole of the unemployed had been absorbed. The trade depression had been succeeded by great activity, prosperity had become general, and unemployment had given place to an actual shortage of labour. All the while the external trade conditions were just as bad for the United States as for us. If it be objected that the United States are not as dependent as we are upon foreign trade the answer comes at once that eighteen months earlier America had vastly more unemployment than we had, and more even in proportion to population. Something must have happened in the United States which did not happen here; something which stimulated their internal trade, while no similar stimulus operated on ours.

There is no mystery about what happened in the United States. Their financial policy as with us had been one of forcing down prices by a restriction of credit and a reduction of the purchasing power of the public. In the autumn of 1921 this policy was for the time being abandoned. The restriction on the increase in bank credit was removed. Bank deposits grew, prices of commodities tended to rise, and the unemployed were gradually absorbed into industry. In eighteen months the work was complete. But now evils of another kind began to show themselves. In the spring of this year there were symptoms of inflation and a check was rightly put on the movement. The deposits of the American National Banks, which stood at their recent lowest figure in September 1921, rose steadily all through 1922, but have declined somewhat in the course of this year. They still show, however, an increase of about 16 per cent over the figure of September 1921.

THE RESTRICTIVE INFLUENCE OF DEFLATION.

In this country, on the other hand, deflation was actively continued until three months ago and still nominally stands as our official policy. In contrast with the American figures our bank deposits to-day show a decline of 10 per cent. This means a severe restriction of purchasing power and a consequent lowering of prices, which is indeed the declared purpose of a deflationary policy. But let us not forget that there are two ways of bringing down prices; we may do so either by an increase of commodities available for purchase or by a forced restriction of purchasing power. The former method is not attended by bad trade, but is slow in producing its effect; the second method is drastic in its operation, but cannot fail to depress trade and cause unemployment.

Gentlemen, very little argument is needed to show that a policy of driving or keeping down prices by a restriction of purchasing power must depress trade. Trade is carried on not by nations but by individuals. If the merchant or manufacturer thinks that prices are going to fall, he will restrict his orders for finished goods or raw materials. He knows that he will not make a profit but a loss on goods bought or manufactured for stock if prices are higher when the order is given than when it is fulfilled. Enterprise is checked and orders are not given. What is the consequence? Men and women are thrown out of employment, less is paid in wages, and the amount spent upon consumption is reduced. We find ourselves in the vicious circle of bad trade and the trader who cut down his orders is justified in his prudence by the insufficient market which exists for his goods.

The conclusion I draw from this statement of the case is very simple. When unemployment is greatly in excess of the normal we should abandon unhesitatingly the deflationary policy which is a cause of unemployment. But let me not be misunderstood. I do not say that a change in official policy would have the same far-reaching effect in this country as in America. Neither do I say that we should pursue a policy of monetary inflation. With any improvement in trade undoubtedly more banking credit and more currency will be required and must be provided, but this is not monetary inflation. The evils

of such inflation are present to all our minds. We remember 1920 with its soaring prices, wide-spread labour troubles and riot of speculation, and no sane man can desire a recurrence of those evils. But inflation such as we then had is widely different from a definite abandonment of deflation and a definite recognition of legitimate trade requirements in the way of credit. Personally I have no fear of a recurrence of monetary inflation. The high traditions of the Bank of England were never in safer keeping than they are in the hands of the present Governor, Mr. Norman. Neither the Prime Minister, nor the Chancellor of the Exchequer, nor the Governor of the Bank of England is likely to countenance such a policy.

SYMPTOMS OF IMPROVEMENT.

Let me say one thing more before I conclude. Whilst it would be a mistake to expect, in view of the present conditions of the world, a full revival of healthy trade, I believe that quite a considerable revival is possible. For some three months now there has been no act of deflation, and I believe that this change from earlier policy is already beginning to have its effect. In prophesying about trade a wise man will speak with bated breath and whispered humbleness. There are so many hidden obstacles and unknown risks in our course that we have to be very careful in speaking of the future. But already I begin to see signs that the very grave depression of the last few months has passed its lowest point. Here and there symptoms of improvement are visible, and, if the trading world are satisfied that no further effort will be made to bring down prices by credit restriction, I believe that our trade will soon show itself in a fair way to recovery.

Cotton Consumption and Stocks.

The International Federation of Master Cotton Spinners' and Manufacturers' Association has published its usual statistics relating to the consumption and stocks of cotton for the half-year ended July 31st last. A short time ago the committee decided that the statistics should be presented in tables showing the total figures of each country instead of merely the actual returns received as heretofore. This decision was arrived at because this census represents now over 90% of the spindles of the world, and it was felt that remaining spindles, for which no returns had been received, could be correctly ascertained by calculation. No returns have come to hand from Germany and Brazil. The world's consumption of American cotton during the second half of the cotton season ended July 31st, 1923, was 614,000 bales less than in the first half-year, and the falling off was entirely due to Europe. Britain used over one-quarter of a million bales less of American cotton during the second half-year than during the first, and its consumption of this cotton during last season was below 2,000,000 bales, or only one-third of the consumption of the United States, in spite of the latter country having only a little more than half the number of spindles of Britain. France, Germany and Italy together consume more American cotton than Great Britain, and Great Britain's consumption of all kinds of cotton represents barely more than one-third of Europe's total consumption. It may be of interest to point out that in 1913 Britain consumed 3,500,000 bales of American cotton.

France is the only important country in Europe that increased cotton consumption during the second half-year as against the first. In Asia, India and China have consumed less, Japan a trifle more. The United States has added to its consumption figure. The world's total consumption of all kinds of cotton for the second half of the season was nearly 700,000 bales less than in the first half, though for the 1922-23 season the world used 22,076,000 bales against 21,161,000 bales in the 1921-22 season. The returns show a most decided falling off in the stocks of American cotton held at the mills. This shortage of mill stocks accounts to a great extent for the abnormal demand that has sprung up during the last few weeks for American cotton to be delivered in the early months. Interesting statistics are given relating to the amount of the short time worked by spinners. Increases in stoppages owing to trade depression have occurred in Britain, Italy, Spain, Austria, Denmark, Mexico and China. Britain's stoppage during the half year was equal to a suspension of the entire industry in the country for seven and three-quarters weeks out of twenty-six weeks.

The spinning spindles throughout the world are given as 156,576,497, and of these Britain has 56,582,873, the United States 37,397,331, France 9,600,000, Germany 9,605,077, India 7,331,219, Russia 7,245,935, Japan 4,877,416 and Italy 4,570,000.

The Co-operative Movement in Denmark.*

By Mr. F. Dalgaard, Secretary of the " Kooperative Fællesforbund".

The chief industry in Denmark is agriculture. The predominance of agriculture in the economic life of the country is shown by the fact that in 1911, out of a total population of 2,700,000 (the present population is about three millions), about 1,000,000 persons derived their livelihood directly or indirectly from agriculture, about 700,000 from manufacturing industry and handicrafts and 294,000 from banks and commercial undertakings. Industry in the narrow sense of the word is comparatively undeveloped in Denmark and, with the exception of Copenhagen, there are no large industrial centres. There are, it is true, several important commercial centres, such as Copenhagen, Aarhus, Aalborg and Esbjerg, but a large part of the trade of these towns consists in the imports and exports of the Danish farmers. The particular form taken by the co-operative movement, as by other world movements in Denmark, has been determined by the character of the industrial life of the country. The co-operative movement, in so far as it represents a movement of the workers or the poorer classes, has not been nearly so important in Denmark as in, for example, Great Britain and Germany. Denmark has for a long time had strong trade unions, and the workers have also been strongly organized for political action, but the co-operative movement has, until recently, been comparatively unimportant. Although a change has been taking place latterly, the movement still attains its greatest development amongst the farmers. Agricultural co-operation in Denmark has its special characteristics, which distinguish it from co-operation in other countries. It has had consequences of the greatest importance for the technical and economic evolution of Danish agriculture and on the prosperity of the country as a whole.

As in most countries, co-operation first appears in Denmark in the form of a consumers' society founded on the Rochdale model. The first consumers' society was founded in 1866 at Thisted, a small town in Jutland, by Mr. H. C. Sonne, a clergyman, who was anxious to raise the economic status of the poorer classes. The establishment of this society soon led to the establishment of other societies throughout the country, chiefly among the farmers. The spread of the movement was largely due to certain provisions in the commercial law of Denmark which made it profitable to form such societies.

The development of consumers' co-operation will be dealt with later. The form of co-operation which became of greatest importance for Danish agriculture was co-operative production as represented, in particular, by the co-operative dairies and slaughterhouses. Until 1880, Denmark had been a grain exporting country, but about that time the competition of the United States began to drive Danish grain from the world market, and Danish farmers had to find other ways of profitably utilizing their land. Before the crisis, cattle had been kept solely for the purpose of providing milk and meat for the farmers' own household. Farmers now began to produce for sale on a larger scale, and it was realized that a relatively greater profit could be obtained by uniting their scattered efforts. The first co-operative dairy was founded in 1882, and within a very short time dairies were established throughout the country. Everywhere the manner of proceeding was the same. The farmers in a certain district formed a co-operative society (*Andelsselskab*) which built a dairy and engaged a manager. Members undertook to deliver to the dairy all the milk produced on their farm and to participate in expenses and profits in proportion to the quantities delivered. To meet the initial expenses a loan was raised for which the members were jointly and separately liable. All the members had one and only one vote in the general meeting.

The production and sale of butter and cheese is now almost entirely in the hands of the co-operative dairies, of which there is at least one in every locality. Thus, in 1909, out of a total of 180,000 farms and estates in the country which kept milch cows, 166,000 which owned 1,174,000 cows out of a total of 1,272,000, delivered all their milk to co-operative societies, so that only about 8% of the farms (owning about 8% of the cows) were outside the co-operative movement. The technical perfection attained by the Danish co-operative dairies and the efficient control which has been instituted have resulted in the production of a butter which has a world-wide reputation,

* "Industrial and Labour Information."

has given Danish agriculture an important place on the world market, and has brought large profits to Danish farmers.

The co-operative slaughterhouses are organized in the same way as the dairies. The above-mentioned transformation in Danish agriculture led, among other things, to the breeding of pigs, which were henceforward fed with grain instead of merely with leavings. This improvement, in conjunction with the technical efficiency of the co-operative slaughterhouses, has created the excellent Danish bacon for which there is so good a market in Great Britain.

Besides the dairies and slaughterhouses, Danish farmers have established other co-operative undertakings, including societies for the purchase of food-stuffs, a cement factory, consumers' societies and a wholesale society of the latter—*Faellesforeningen for Danemarks Brugsforeninger* (F. D. B.). The total turnover in 1921 of all the Danish agricultural co-operative societies was 1,248,000,000 kr., of which 535,000,000 kr. represents the turnover of the dairies, 330,000,000 kr. that of the slaughterhouses and 174,000,000 kr. that of the wholesale society.* This wholesale society, as also the distributive societies, are founded on the Rochdale model. In the whole country there are about 1,800 distributive societies including the workers' societies, which are dealt with below. The distributive societies have the right to buy from the wholesale, but are not required to do so. The wholesale is in the main a purchasing society, but it also runs several factories (margarine, shoes, soap, rope, tobacco, chocolate).

The co-operative activities of the farmers have been an essential factor in the economic development of Denmark for more than forty years. Although the movement is not political it nevertheless contributed in great measure, owing to the economic and moral strength it has given to the farmers, to the victory of democracy in the year 1901, when the parliamentary system was accepted in Denmark.

As a movement among workers, co-operation in Denmark has only attained an important development within the last fifteen or twenty years. This is due in large measure to the close relations existing between the workers' movement in Germany and Denmark. As in Germany, the development of consumers' societies has been checked by Lassalle's aversion to them, and the first co-operative undertaking of the workers was a production society, the Workers' Co-operative Bakery of Copenhagen, which was founded in the year 1886. This society was instituted as a joint-stock company, of which the workers' organizations were the shareholders. The annual profits distributed must not exceed four per cent, any surplus being retained to strengthen the position of the undertaking. Any one may buy from the bakery. The chief importance of the bakery for the consumers lies in its influence on prices, which was very evident during the war, when the Government itself acted on the basis of its calculations. The bakery has its own mill. Its yearly turnover is about 3,000,000 kr. In all the large Danish towns there is now a workers' bakery, in most cases organized in the same way as that of Copenhagen. In the provinces 35 of these bakeries have formed a federation for the purchase of corn, and also have their own mill. These 35 bakeries had a turnover in their last financial year of 10,000,000 kr.

The bakeries were the pioneers of co-operation in the towns. The consumers' societies belong to a quite recent date. The first consumers' society was, it is true, founded in a town as early as 1866, as has been stated, but the workers themselves had no part in its foundation. A consumers' society was founded at Aalborg in 1872, and this society still exists. It was only, however, about the beginning of the present century that consumers' societies came to be generally established in the towns. In 1916 there were in Copenhagen sixteen separate societies, which amalgamated in that year to form a single society—the Metropolitan Consumers' Society (*Hovedstadens Brugsforening*)-which, at the time of the amalgamation, had 7,600 members and 20 distributive departments. It has now 30,000 members and more than 100 distributive departments. The turnover in 1920 was 16,000,000 kr. The reserve increased in the seven years from 64,000 kr. to 1,140,000 kr. The society has a factory for the manufacture of food-stuffs. Its premises are modern buildings, situated for the most part in the new quarters of the town, constructed by the important workers' building society with which the society is in close collaboration and to which reference will be made below* The Copenhagen society

* For the turnover of the Danish co-operative societies in 1921 and 1922, *cf. Ind. and Lab. Information*, Vol. V, No. 10, p. 497.

* On the Working Men's Co-operative Building Association and its relations with the Danish Co-operative Bank, *cf. Ind. and Lab. Information*, Vol. VI, No. 7, p. 338.

has united with 26 consumers' societies in the country to form a federation of workers' societies. This federation has its own printing and bookbinding establishment. The turnover of the federation during its last financial year was 30,000,000 kr.

As already stated, the workers' societies are members of the wholesale society of all the Danish consumers' societies (F. D. B.). All members of consumers' societies are jointly and separately liable for obligations contracted by the society. Dividends are allowed on purchases.

The third important branch of the co-operative movement in the towns is the co-operative building undertakings. Already before the war the housing problem in Denmark was a serious one, and the war and the rise in prices greatly aggravated the situation. The development of building societies in the capital and provinces represents an attempt to cope with the housing shortage. The essential feature in the organization of most of the societies is that the members take a share and contribute a sum equivalent to the amount of a year's rent. They are jointly and separately responsible for the liabilities of their section up to an amount not exceeding the share and the contribution. The society pays interest at the rate of 4% on the latter. The members pay an annual rent corresponding to the expenses of the society. Forty of the Danish building societies, including the largest of them, have formed a federation for common purchases. The building societies have built altogether about 7,000 dwellings. The largest of them, the Workmen's Co-operative Building Association of Copenhagen, has built more than 2,500 dwellings in the eleven years of its existence. It has also built, in conjunction with the Farmers' Co-operative Bank, the large block of offices known as "Axelborg" at Copenhagen. The society possesses its own brick-fields and joinery department. In their chief object, which is to provide hygienic dwellings at a low price, the building societies have in most cases succeeded.

The workers' co-operative press occupies a special position in the co-operative movement. This is a co-operative society founded by the trade unions, with a National Committee for the whole country. In every town in Denmark appears a local edition of the workers' daily newspaper, which contains, in addition to political articles, news of the trade union and also of the co-operative movement. The co-operative press is the oldest co-operative institution of the Danish workers and participated in the foundation of several of the co-operative societies, for instance, in the foundation of the first co-operative bakery in 1886 and in that of the co-operative brewery *Stjernen* in 1902. This brewery, like the bakery, is a joint-stock company, which pays dividends limitated to 4%, the workers' organizations being the shareholders. Last year's turnover was about 3,000,000 kr. The co-operative dairy "Concord" (*Enigheden*) at Copenhagen also dates from about the beginning of the century. From humble beginnings it has developed into a vast undertaking, which in 1922 had a turnover of 8,000,000 kr. The organization resembles that of the brewery.

A special form of co-operation is that which was started among the artisans during the great lock-out of 1899. Smiths, joiners, carpenters and masons opened shops of their own which have since developed into large undertakings. A further example of the same kind of co-operative institution is the electrical firm "Alliance" and the workshops of the paviors and navies. The co-operative societies only make use of these workshops when their prices are the lowest, but the very fact that these undertakings exist and make tenders acts as a regulative influence. They are constituted as joint-stock companies but their shares are not transferable.

Another of the older co-operative institutions is the Workers' Life Insurance Company, founded about twenty years ago. The sums insured with this society now amount to about 10,000,000 kr.

One of the results of the war was the formation of the Workers' Fuel Company, which began in 1915 with the purchase by the Copenhagen trade unions of a few wagon-loads of coke in Germany, with a view to obtaining cheap fuel for their members. Purchases gradually increased till the undertaking became, before the end of the war, the largest importer of coal and coke. The large profits made by the undertaking, which is now a joint-stock company, were not divided among the shareholders (the workers' organizations), but used to strengthen the position of the company. Smaller companies for the production of cheap fuel for their members have been founded throughout the country.

One of the most recently formed thought at the same time most important of the workers' co-operative societies, is the Workers'

Co-operative Bank, founded in 1919 for the purpose of taking charge of the financial affairs of Danish workers, whether in their organized or private capacity. The Bank has made a good start. Its annual turnover is about 400,000,000 kr. Another co-operative institution, founded for the use of workers' organizations, is a co-operative audit office.

Although the above enumeration includes the most important workers' co-operative societies, it is not exhaustive. Among those which have not been mentioned, are such societies as the meat societies and the co-operative book department "Forward". Last year all the workers' co-operative societies in Denmark united to form a Danish Co-operative Union (*Det kooperative Fællesforbund i Danmark*). The individual societies retain their financial autonomy, the function of the Union being to promote the co-operative movement and remove causes of friction and overlapping. The Union will also act as a link between the Danish movement and foreign co-operative organizations. The Union, like the single societies, is non-political in character. Excellent relations exist between it and the farmers' federation.

The World's Oil Output.

Despite the reports repeatedly received of the exhaustion of one or the other of the petroleum deposits in various parts of the world, such comprehensive statistical evidence as is available upto the present, which does not, of course, take the current year into account, would appear to prove that the universal production of mineral oil has very considerably increased since pre-war times, the figure for 1922 being more than twice that for 1914. Though certain European countries have a decidedly smaller output to show, and there is no doubt that some few deposits are practically played out, the production of extra-European countries in particular continues to rise so prodigiously that there need be no fear of the world's supply running out. The following table, drawn up by the American Petroleum Institute, shows the comparative quantities produced in 1914, 1921 and 1922. The figures represent millions of gallons.—

	1914	1921	1922
Rumania ..	12,827	8,368	9,817
United States ..	265,763	472,183	551,197
Italy	40	34	31
Canada	215	190	179
Russia	67,021	29,150	35,091
Poland	5,033	5,167	5,110
Japan and Formosa	2,738	2,447	2,004
Germany ..	996	200	200
India	7,410	8,000	7,980
Dutch-India ..	11,835	16,958	16,000
Peru	1,918	3,699	5,332
Mexico	26,235	193,398	185,057
Argentina ..	276	1,747	2,674
Trinidad	644	2,354	2,445
Egypt	777	1,255	1,188
Persia	..	16,673	21,154
Venezuela		1,433	2,335
Brit.-Borneo		1,411	2,915
	1914	1921	1922
France		392	494
Algeria		2.7	9
England		2.7	..
Columbia		..	323
Other countries ..	20	..	5
	403,746	765,065	851,540

One of the most stupendous increases during the period 1914–21 was that recorded in Mexico. That the figure for that country should show a slight relapse in 1922 is owing to the failure of one of the chief oil-beds, which will, however, doubtless be made up for speedily enough by fresh exploitation. The Russian output has improved since 1920 and Russia thus still occupies a prominent place on the list. Great progress is noticeable in the case of Peru and some other South American countries, likewise in that of Persia and British North-Borneo, where petroleum exploitation only dates back a few years. In proportion to its vast extent, the increase in the United States is not so very great, a fact which is reflected in the imports of oil into the country, which in 1922 exceeded its exports very substantially.

One of the greatest difficulties in the wood industry lies in the drying of the wood, the seasoning process. Wood is difficult to dry because the small cellules deep in the wood remain alive for a long time and a living cell does not easily lose its water. It can only lose its water after it has been killed by the action of a gas or vapour, says the *Australian Manufacturer*. Accordingly, fresh wood was subjected to the action of the vapours of benzine in an autoclave. The cellule was killed in this manner and under the action of hot air the drying of this wood then took place very rapidly.

U. P. Forests, 1922-23.

The financial results of the year under report are a revenue of Rs. 83,72,000 and an expenditure of Rs. 60,82,000, leaving a surplus of nearly 23 lakhs of rupees, which is the average net revenue of the previous five years and an increase of ten and a half lakhs on the net revenue of the previous year. The gross revenue of the year fell short of that of the previous year by nearly three lakhs owing to the general depression of the timber trade, but this decrease was fully compensated by a curtailment of 13 lakhs in expenditure. Severe retrenchment was practised in the Utilization and Kumaun Circles whose charges were reduced by nine and three-quarters and two and a half lakhs of rupees. The former circle, which in the past five years has been responsible for an average deficit of Rs. 3,81,000, was this year run at a net loss of Rs. 5,83,000. The Kumaun Circle, which showed a net deficit of nearly two and a half lakhs, was labouring under the prevalent depression of trade which particularly affected the market for chir wood, and was also suffering the after-effects of the disastrous fires with which at the instigation of the non-co-operators the Kumaun villagers devastated the forests in May, 1921.

The Utilization Circle was inaugurated in 1918 with great hopes both of increasing the income of the Forest Department and of fostering new industries in the Province. Large sums were expended on the development of the Wood-Working Institute for educational purposes, and on commercial enterprises, a resin distillery, a turnery and a bobbin factory; but experience soon showed that Government financial rules of procedure are not adapted to the successful conduct of a commercial undertaking. Apart from the fact that the lack of differentiation between capital and revenue expenditure destroys the prospect of showing an annual profit, the financial procedure under the reforms is unsuited to a growing business. Budgets have to be framed six months before the budget year and no new expenditure can be incurred without an intricate procedure which may occupy several months. The conditions of trade do not admit of such delay. At first it was hoped that the financial rules might be modified to remedy this difficulty, but in the last two years the rapid deterioration of the provincial finances has rendered it imperative to cut down unremunerative expenditure in commercial departments. Accordingly at the close of the year the Wood-Working Institute was restored to the Industries Department, to whom it originally belonged, and from the 1st September, 1923, the resin distillery, turnery and bobbin factory have been transferred to a syndicate who will shortly convert these factories into two companies, in which this Government will retain a large share. Practically all the bobbins used in Indian mills are at present imported from abroad, and there is a large market for resin, paints, and varnish. These factories have therefore great possibilities, and if they succeed will further the economic independence of India and more than justify the expenditure which this Province has undertaken as a pioneer of new industries.

Mention was made last year of the decision of the Governor-in-Council to adopt the recommendations of the Kumaun Forest Grievances Committee, which was appointed shortly before the incendiary outbreak of May, 1921, to examine and report on the forest policy in Kumaun. It was clear that this destruction of valuable forests, though immediately due to the instigation of outsiders, would not have occurred on so large a scale if the villagers had not had genuine grievances. Steps have been taken to carry out the recommendations of the Committee, and the Governor-in-Council believes that genuine grievances and vexatious restrictions have been removed. The forests of Kumaun will not for many years recover from the devastation wrought in 1921. Many trees have died, the yield of resin has been reduced, and the lowered vitality of the trees has encouraged the spread of insect pests and fungoid diseases.

The Western and Eastern Circles, as usual, were responsible for the income of the department producing between them a net profit of more than 34 lakhs of rupees. The income of the Western Circle was seriously affected by the monopoly given to a Punjab firm by the North-Western Railway which is the buying agent for deodar sleepers for the various railways. The contractors who export deodar sleepers from our Chakrata forests have found their ordinary market closed and have had to sell at a heavy loss to the monopolists. The United Provinces Government have represented this aspect of the matter to the Railway Board and trust that some remedy

will be found. Owing to the drastic curtailment of expenditure in the Utilization and Kumaun Circles more money should now be available for productive expenditure in the Western and Eastern Circles. Schemes for light tramways which will greatly reduce the cost of extracting timber from the forests to rail-head and thereby increase the revenue of the department, have been prepared and will, it is hoped, be financed next year. A tramway in Motichor valley and a wet slide for sleeper extraction in Chakrata were the only works of this kind for which money could be provided during the year.

The Afforestation Division has slowly but steadily continued the work of converting barren ravine land on the banks of the Jumna into flourishing forest of babul, sissoo, siris, and khair. Progress has been slow because funds have been limited, but many landowners in the ravine areas on seeing the success already achieved have been applying to the Forest Department for help in the afforestation of their lands. Apart from the value of the fodder and timber on these afforested areas the work is of great importance in checking the process of erosion which yearly converts more and more arable land into barren ravines. The campaign against erosion is a work beyond the finances of Government, and large results will not be possible until the owners of ravine lands are prepared to spend money freely on afforestation.

The Chief Conservator's report contains interesting information about the silvicultural work of the various circles. Of particular interest is the success of the Taungya system in the Gorakhpur division where cultivators are allowed forest land free of rent in return for sowing and tending sal between the lines of their crops. The system is said to be popular with the Gorakhpur villagers and to be the cheapest and most successful method of regenerating a forest. The year's work of the Working Plans and Research Circle shows important progress. This circle cannot be judged by its own expenditure and income any more than departments such as those of Education or Public Health can be judged by the same standard. The function of this circle is to guide silvicultural research, the results of which are as valuable to the forest officer as the discoveries of medical research are to the doctor.

The number of prosecutions for forest offences showed a slight increase on the average for the past three years. There was a large reduction in the number of fires but an increase in the prosecutions for unauthorized grazing. In Kumaun, owing to the acceptance of the recommendations of the Forest Grievances Committee, there was a large decrease in the number of forest offences, but the Chief Conservator considers that this decrease does not connote a similar decrease in the damage done to the forests.

German Chemical Industry.

A recent report from Germany states that the A. G. fur Anilinfabrikation, Berlin, now has its new works for the manufacture of artificial silk in operation. It is not mentioned, observes the "Chemical Age", what process is being employed, but it is known that the company has been experimenting for some time with the acetate allulose process similar to that now being successfully worked by the British Cellulose Company. It is also said that the company intends to build two large new factories for the manufacture of dyestuffs, one near Bitterfeld and one which will specialize in the production of azo colours at Greppin. The Chemische Fabrik Griesheim-Elektron, Frankfort-on-Main, states in its report on the year's working that the factory was well employed last year. Sales abroad are being adversely affected by tariffs and import regulations. The report of the H. G. Farbwerk Mulheim, formerly A. Leonhardt and Co., also states that sales last year were good, particularly in Germany. Owing to the depression in the German dyeing and printing industry the domestic demand is not good at present, and sales in most foreign markets have also fallen off considerably. One great difficulty is the shortage of various raw materials as a result of the Ruhr occupation.

Commenting on Lancashire's growing absorption of East India Cotton, *The Times* says that though the demand is stimulated by the high price and relative shortage of the American supply, it undoubtedly represents a well-established tendency made possible by India's progress in the improvement of the staples. The growth of Lancashire's absorption is a happy augury, declares *The Times*, for the completion of the Lloyd Barrage over the Indus near Sukkur and the system of associated canals which will provide some millions of acres in Sind suitable for long-staple cotton.

Scientific and Industrial Research in Britain.

In spite of difficult financial conditions the annual report for 1922-23 which the Department of Scientific and Industrial Research has just published (H.M. Stationery Office, 4s. 0d. net) is of more than usual interest, and even those who are familiar with the Department's general scheme of operations may be surprised at the volume and variety of the work which has been done and is proceeding under its direction and with its aid.

This is brought out more clearly than in previous reports, because the actual work done by the various Research Boards and Committees is now presented separately in a series of summaries occupying about half the text, while the reports of the Privy Council Committee itself (the body that is in fact the Department) and of its Advisory Council deal respectively with the Department's proceedings during the year and with the scientific policy by which they have been guided. This method of exposition certainly gives a clearer view of the aims of the Department as well as of the results of its work. While, so to speak, the number, nature, and state of growth of the trees are shown more fully than before, the shape of the wood is better exhibited—a matter of considerable importance to an organization that expressly and intentionally depends on industrial and to a large extent public co-operation.

Fuel Research Board.

What perhaps especially distinguishes the Department from other public authorities is that by its constitution and practice it recruits those who do and direct most of its work from outside the public services. A typical example of its methods is to be found in the Fuel Research Board, in which a notable change has been made during the past year. Founded early in 1917, it consisted of four men eminent in science, technology, and practical business, and except for the retirement of Sir Richard Redmayne it remained unaltered until May of this year. The Chairman and Director of Fuel Research was Sir George Beilby, and the intimate acquaintance of his colleagues, Sir Charles Parsons and Sir Richard Threlfall, with the many aspects of the problems of producing and using fuel enabled them to give him the necessary support and latitude in laying the foundations of the Board's work. What the consequence has been is to be found in previous reports and has been summarized from time to time in these columns. The most conspicuous of his services are doubtless the remarkable Fuel Research Station at Greenwich which he planned and constructed, the scientific and equitable "therm" system of charging for town's gas which he devised for the Board of Trade, and the Research by which he has established an exact foundation for the low-temperature carbonization of coal.

Feeling the need to retire from the more strenuous of his duties, Sir George Beilby has resigned the offices of Chairman of the Board and Director of Fuel Research, leaving behind him a complete administrative mechanism for the work, knit together by the ideals, at once broad, cautious, and far-seeing, with which he laid its foundations. He has become, however, Honorary Adviser to the Board, and remains a member of the Department's Advisory Council, and on his advice the structure of the staff has been considerably developed. He has been succeeded as Director of Fuel Research by Dr. C. H. Lander, hitherto his assistant, who for some months during his enforced absence on leave, was Acting Director, while Sir Richard Threlfall becomes Chairman. In addition to Sir Charles Parsons the Board now comprises six other scientific and business men, and panels of experts are to be set up to advise the Director on problems affecting particular industries, as he may from time to time require. The effect of these changes will doubtless be to enlarge the scope of the Board's work, but already it has a great programme in hand, including the physical and chemical survey of the national coal resources, a variety of investigations on methods of using coal and other fuels for industrial and domestic purposes, and extensive experimental and other inquiries into materials and methods for the production of power alcohol.

Forest Products.

Another body typical of the Department's policy is the Forest Products Research Board, with its committees on identification and structure, timber preservation, extractives, seasoning, and "timber mechanics," and its research station in the Royal Aircraft Establishment at Farnborough to supplement the work it can get done in existing establishments. The Board recognizes that those who are forced by circumstances to make immediate decisions must be guided by such information as is immediately available, and is

proposing therefore to undertake a certain amount of routine testing on suitable financial terms to indicate as far as possible the suitability of particular timbers for various uses. It considers, however, that its chief duty is not to obtain results by empirical tests but to discover the reasons for those results, and generally to accumulate a sufficient body of knowledge to place timber technology on a sound scientific basis.

The position is analogous to that of food preservation. Engineeres are now able to produce any desired degree of cold with considerable exactness, but ignorance of fundamental facts in animal and plant physiology has made the use of reduced temperatures mostly empirical and sometimes unsuccessful, the refrigerated food being damaged by the same process that preserved it. Accordingly the Food Investigation Board attacked this part of its work by fundamental investigations in animal and plant physiology, which already have led to valuable practical conclusions. Similarly, engineers can make kilns to season timber at any desired temperature and degree of ventilation and humidification, but until definite knowledge is attained of what actually happens when wood is seasoned, and how variations of structure of timber affect its strength, those for whom the kilns are made cannot specify the exact conditions the kilns should provide. The researches the Board is laying out are, in fact, so designed as to give ultimately an ascertained life-history of timber when being seasoned. They must necessarily take longer than would be occupied in getting an imposing pile of empirical results ; but the Board's view is t at by such investigations alone can an assured basis of practice be obtained, and it undertakes the work both because of the great variety of interests to be served by it and the absence of any other body by which it can be done.

Research Associations.

The progress of the Research Associations seems to have varied with the course of trade. In the first year, which was the last year of the war, four associations were formed ; in the next two years, during most of which trade had boomed, seventeen ; in the three years from the end of 1920 to date, during which trade had been expected to boom but in fact fell away, only one. Only seven of the twenty-two associations have passed the higher limit, and the majority have done little more than reach the minimum subscription. One of the associations has now reached the end of the fifth year of work, and others are rapidly approaching it.

In these circumstances the Department has had to decide what course to take with associations needing further grants at the end of the term of their present contracts. It has decided inexorably that these contracts will not be renewed ; but where an association is short of the annual "effective income" that will allow it to deal with its scientific problems adequately, and the support it receives from firms indicates that it can command the confidence of the industry, a further grant may be made on new conditions. Such grant will be on a progressively decreasing basis, will not extend beyond a maximum of five years, and will in no circumstances be renewed. The possibility of any fresh grant being made will depend also on the negotiations being completed befere the available balance of the million fund has been earmarked for new associations.

Future Developments.

The Department's operations, multifarious though they still are, continue to be restricted by want of funds. Its present net estimates are only a little over a quarter of a million pounds, additional to something less than that amount which it has saved from its funds in previous years or received by private benefactions. It is to be hoped that to some of its projected developments the generosity of private benefactors may again contribute. A conspicuous opportunity may be found in connection with the intended extension of the Teddington estate, on part of which the National Physical Laboratory stands. A site of about the same area is being laid out with roads by the Office of Works as part of its plans for the relief of unemployment, and the roads are being so designed as to accommodate the further research establishments that are likely to be wanted. When the buildings come to be erected they will therefore be of such shape and so situated in regard to each other as to facilitate the work in a way that the existing hand-to-mouth erections have failed to do. Among the most urgently required extensions is a chemical laboratory, in which fundamental investigations of national interest, such, for example, as those into the production of power alcohol, may be carried out with an efficiency that is impossible in existing circumstances. Such a laboratory would undertake no routine

testing or other work for private firms conflicting with the activities of private practice, but it would have a vast field of operation in the numerous questions of national importance of which the solution would benefit an indefinite number of industries. The provision of capital sums to meet the cost of buildings and equipment would doubtless be made conditional on adequate arrangements being made by the Department for upkeep, and a benefactor who wished that the utmost value should be got from his gift would thus have an exceptional opportunity of seeing his wishes assured.

The report concludes with a statement as to the future of the Imperial Institute, on which the Department was asked to advise. The view is expressed that a clearing-house of scientific and technical information and of the industrial and commercial information related thereto is a necessary part of any effective policy of inter-Imperial and even Imperial trade. This pious opinion is doubtless unexceptionable, but it does not give any indication as to the body that should provide the clearing-house. Both the future of the Imperial Institute and the part to be played by the Research Department deserve more precise and better reasoned conclusions than the report sets out. When account is taken of the extent to which the Department has already laid itself out to be a clearing-house of scientific and technical information, the question arises, obviously, whether its information is being used to full advantage in the development of Imperial resources.

Summary of Japan's Loans.

According to the available particulars of Japanese borrowings, as quoted in the *Times* the amount of Japan's external debt is about 121½ millions sterling, in addition to which there are outstanding about £10,000,000 of bonds of the principal municipalities. A list of the various loans is given in the following table:—

Bond	Amount outstanding
Government loans.—	£
4%, 1899	9,500,000
4½%, 1st series	17,838,400
,, 2nd series	18,142,560
4%, 1905	24,999,320
5%, 1907	22,999,440
4%, 1910	10,999,980
5% S. Mnch. Rly., 1932 ..	6,000,000
,, 5 %, 1933–48	4,000,000
,, 4½%	6,000,000
4½% Kansai Railway ..	1,000,000
Total ..	121,479,700
Municipal loans.—	£
Tokyo 5%, 1917–36 ..	1,004,540
,, 5%, 1911	4,524,300
Yokohama, 5%, 1917–37 ..	260,700
,, 5%, 1924–1954 ..	716,500
,, 1915-29	74,300
Osaka, 5%..	2,466,900
,, Harb. 6%	288,800
Nagoya, 5%	620,000
Total ..	9,956,040

Of the Imperial loans, the two series of 4½% bonds have, as special security, a charge on the revenue arising from the Government tobacco monopoly, while the various issues of South Manchurian Railway bonds, besides being a direct obligation of the Government, have also the backing of the large revenues of the railway undertaking, which is, of course, outside the damaged area. Before the war, the principal holdings of Japanese bonds were domiciled with investors in Great Britain, France and the United States. While it is probable that British investors are to-day more largely interested than at any time, there has been a considerable reduction since the war in continental holdings, a large part of which has been transferred to America.

Paper Enterprises in India.

After many delays the Carnatic Paper Mills, Ltd., is likely to commence production in July. The mills are located at Rajahmundry, on the Godavari River to the north of Madras, in a district in which large quantities of bamboos and rice straw are available. It is a deltaic country, with many inter-connecting canals, and consequently the transport of the raw materials to the mill should be extraordinarily cheap. The output is estimated at ten tons of dry pulp and five tons of paper per day during the first year ; but it is anticipated that these quantities will be substantially increased later on. The capital of the Company is 30 lakhs of rupees, equivalent to approximately £200,000.

Sisal and its Supporters.

According to *Commerce Monthly*, the organ of the National Bank of Commerce in New York, 90 per cent of the world's requirements of binder twine is manufactured in the United States and Canada. Readers of the reprint of Major Notcutt's articles on "Sisal Cultivation to Pay"* will be interested in the following which the bank monthly goes on to discuss, especially that portion in which new sources of supply are asked for :—

"Harvesting the grain crops of the world each year requires the consumption of over 300,000,000 lbs. binder twine, of which 90 per cent is manufactured in the United States and Canada. Domestic consumption of the United States averages 250,000,000 lbs. per year, and net exports in 1922 principally to Canada, Argentina, United Kingdom and France were 69,000,000 lbs.

"By far the greater amount of binder twine is made from hard fibres, although the soft fibres, such as jute, hemp or flax are used to a limited extent. About 90 per cent of the binder twine manufactured in the United States is made from sisal of some kind, and 80 per cent is made from Yucatan sisal or henequen. The proportion of henequen and other fibres, particularly manila hemp, which is used, may fluctuate from year to year, depending on the relative costs of the different fibres."

Commenting on the importance of new sources of sisal, the bank states : "The source of supply of sisal for the manufacture of binder twine is far from satisfactory. Manufacturers in this country are dependent for their raw materials on the growers in a single small state in a foreign country. The high prices of recent years have called forth frequent protests and stimulated investigations into the possibilities of the cultivation of sisal in other countries. The Federal Department of Agriculture and the Agricultural Bureaus of our dependencies have spent a great deal of time and effort in attempting to find suitable territory for the cultivation of sisal and in encouraging its cultivation there.

"So far the most promising results have been obtained in the Philippines, Hawaii, Porto Rico and Florida. Sisal has been grown successfully in all these places, and is being produced on a commercial scale in the Philippines and Hawaii. It is hoped that ultimately the Philippines will be the source of a large part of the material used in the manufacture of binder twine in the United States. In 1920 Hawaii shipped 229 tons of sisal to the United States. In Porto Rico and Florida sisal planting has hardly passed the experimental stage, but in both places there are considerable areas of cheap land ideally suited for the cultivation of sisal.

"East Africa is second only to Yucatan, the most important producer of sisal. German East Africa was the seat of active fighting during the war, but many of the sisal plantations were either destroyed or abandoned and allowed to deteriorate, so that the production which was 20,000 tons a year before the war, was said to be only 10,000 tons last year. Production in British East Africa increased in the same time from 6,000 to 8,000 tons, and in Portuguese East Africa from 1,000 to 5,000 tons. Total present annual production of sisal in East Africa is probably in the neighbourhood of 140,000 bales."

Continuing, reports *The Public Ledger* of London from whose columns we have borrowed the above, pending the arrival of our own copy, the bank says that Java, the Bahamas, New Guinea, the Solomon and Fiji Islands, and Cuba and other Islands of the West Indies also either produce sisal at present or are suitable for production.

Regarding the production of fibre in Nyasaland recent reports show that the output for 1920-1921 compares as under with other crops :—

	1920 lbs.	1921 lbs.
Fibre ..	290,822	243,742
Cotton ..	1,475,232	913,718
Tobacco ..	4,945,169	4,963,130
Rubber ..	128,253	44,910

What could we do in Mysore and South India generally and what are we doing actually?

Steps have recently been taken by the Minister of Education in Mexico with a view to the foundation of an association entitled, "Pro Culture," the aim of which is to raise the standard of living of the workers by increasing their educational opportunities. The movement has met with considerable support throughout the country, says the "Industrial and Labour Information",

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* "Sisal Economics." By Major Notcutt, Price 7sh. 6d. Post free.

Coffee in India, 1922-23.

By the Director of Statistics, India, Calcutta.

The coffee industry of India, is practically confined to Southern India, comprising the Madras Presidency, Coorg, and the States of Mysore, Travancore and Cochin. The statistics dealt with in this note are based on data furnished by the coffee planters, which are received in this Department through the Director of Industries, Madras, the Director of Land Records and Agriculture, Coorg, and the Mysore Durbar. They are incomplete inasmuch as estates or plantations of an area smaller than 10 acres do not furnish returns and are therefore excluded from these tables.

The number of reporting plantations in the year under review was 2,998, covering an area of 227,676 acres, as against 2,964 with an area of 216,746 acres reported a year ago. New land planted with coffee in these plantations during the year amounted to 7,224 acres, while the area of old cultivation abandoned was 2,842 acres. This represents a net increase of 4,382 acres over the total area (127,273 acres) under coffee for 1921-22. The total reported area under cultivation in the year 1922-23 was, therefore, 131,655 acres, or an increase of 3 per cent over that of the preceding year. Of this total area, Mysore accounted for 52 per cent, Coorg 24 per cent, Madras 22 per cent, and Cochin and Travancore together 2 per cent.

The total reported production of cured coffee during the year was 25,467,687 lbs., as compared with 20,586,644 lbs. (revised) in the preceding year—the yield per acre of plucked area being 296 lbs. (202 lbs.) in Madras, 251 lbs. (182 lbs.) in Coorg, 177 lbs. (179 lbs.) in Mysore, 149 lbs. (49 lbs.) in Travancore and 126 lbs. (128 lbs.) in Cochin. The figures for 1921-22 are shown in brackets.

The daily average number of persons employed in the plantations during 1922-23 was returned at 67,903, of whom 41,717 were permanently employed (namely, garden labour 28,012 and outside labour 13,705) and 26,186 temporarily employed (outside labour), as compared with 69,201 persons (26,209 garden and 15,827 outside labour permanently employed and 27,165 temporary outside labour) in 1921-22.

The figures of imports and exports of coffee into and from British India during the past four official years, 1919-20 to 1922-23, and the six months, April to September, 1922 and 1923, are shown in tables Nos. 4 and 5.

Coffee is imported chiefly from the Straits Settlements and Ceylon, and re-exported to Maskat Territory and the Bahrein Islands.

Exports of Indian coffee decreased in 1922-23, as compared with the preceding year, by 65,900 cwts. to 169,000 cwts. The principal customers of Indian coffee are France and the United Kingdom ; they reduced their requirements by 20,200 cwts. and 28,200 cwts. and took 60,700 cwts. and 57,000 cwts. respectively, in 1922-23. With the exception of Asiatic Turkey (including Mesopotamia) which took 3,000 cwts. more than in the preceding year, the exports to other principal importing countries decreased. In the six months, April to September, 1923, the exports increased to 122,500 cwts. as compared with 77,600 cwts. in the coresponding period of the previous year. All the principal importing countries took larger quantities, the most noticeable increases being in France, the United Kingdom, Arabia, and the Bahrein Islands.

Japanese Banking.

Banking in Japan is extensive, the joint-stock banks especially possessing a wide organization. At the end of 1922 there were in Japan no less than 1,678 joint-stock banks with an aggregate share capital of 1,423½ million yen, which is equivalent to a capital of 980,000 yen per bank on the average. There were, moreover, 146 savings banks with a share capital of 33¼ millions—an average of 225,000 yen per savings bank. If the banks of Corea are also taken into consideration, the total number of banks exceeds 2,000. This abundance of banks has naturally entailed a crisis in Japan banking affairs and the Government is now endeavouring to bring about a reduction in the number of banks in the country by offering facilities of fusion. During the first five months of the current year, however, only 24 cases of fusion were recorded, representing a capital of 12¾ million yen.

Sericulture in Madras.

For some time past, the Madras Government have had under consideration ways and means of developing sericulture in the Madras Presidency where, up till the present, it has so far obtained a real footing only in the Kollegal taluk of the Coimbatore district. In 1920, Mr. Wood, the Director of Agriculture, submitted a scheme for the development of the industry in that taluk which contemplated the establishment of a hill farm, a central farm and demonstration farms. Lack of funds, however, prevented more than partial effect being given to the scheme. A small farm was opened at Coonoor in 1920 for the production of healthy vigorous seed for supply to the weavers in Kollegal and a small demonstration farm was opened last year at Singanallur in the Kollegal taluk itself on which the 'hill stock seed' from Coonoor is reared and from which seed-cocoons are supplied to the village rearers. Funds to enable the scheme to be carried fully into effect were provided in the budget for 1923–24 and the Director of Industries to whom the charge of sericultural work had been transferred was requested to report whether he had any modification to suggest to the scheme originally submitted.

In the meantime, in June 1922, the Director of Agriculture had been asked to report the localities outside the Kollegal taluk suitable for the introduction of the industry. His report was received in August 1922 but as the charge of the sericultural work was shortly afterwards transferred to the Department of Industries, it was referred to the Director of Industries for further investigation. The Director of Industries recently submitted comprehensive proposals for the development of the industry both in Kollegal and throughout the rest of the Presidency. The Madras Government have given their careful consideration to his well thought-out proposals and have just issued their orders on them.

The proposals are—

(1) That the scheme for the establishment of a central sericultural farm and a number of demonstration farms in the Kollegal taluk, put forward by Mr. Wood should be abandoned, that the demonstration farm, now in existence at Singanallur, should be closed and that in its place a Peripatetic Rearing Party consisting of one moth tester and one rearer on Rs. 30 each per mensem should be established, with its headquarters at Singanallur. This party would work in the villages in order to instruct the weavers how to carry out microscopic testing of moths and how best to handle worms. They would also instruct them in regard to the growth of bush mulberry, and the pruning and picking of leaves, would receive and distribute to the rearers disease-free seeds obtained from Coonoor and would conduct experiments in improved methods of reeling silk;

(2) that the hill farm at Coonoor should be expanded into a central distribution station for eggs or seeds, seed-cocoons, cuttings or seedlings and into a Research Institute for the silk industry of the Presidency under the direct supervision of the sericultural assistant; and

(3) that, for the development of the industry outside the Kollegal taluk, a sub-assistant should be deputed to the various localities considered suitable for the purpose to help private persons in the selection of suitable land for mulberry plantations and in planting and weeding, etc. During the rearing season, he would be deputed to rear one or two crops with the help of the weaving maistries at their respective stations. Gentlemen who possess mulberry nurseries would be requested to provide facilities for the purpose and also quarters for the rearing maistries. If assistance in this manner were not forthcoming, the necessary expenditure would be incurred from Government funds. The weaving superintendents and the weaving maistries would be trained in sericulture to the extent necessary to enable them to carry out the duties it is proposed to entrust to them.

The Madras Government approve the first of these proposals. The second proposal involves—

(*a*) the transfer of 10 acres of land from the Forest Department to the Industries Department for the extension of mulberry cultivation and its clearing at a cost of Rs. 200 per acre;

(*b*) the construction of a rearing house at a cost not exceeding Rs. 4,000 and its fitting and equipment at a cost of Rs. 1,900 (Rs. 100 for reeling equipment, Rs. 300 for fittings and Rs. 1,500 for microscopes);

(*c*) the employment of one foreman on Rs. 50 per mensem, two rearers on Rs. 25 each per mensem, two mulberry cultivators on Rs. 25 each per mensem, one clerk on Rs. 35 per mensem, and three peons on Rs. 15 each per mensem.

(*d*) the construction of quarters for the foreman at a cost not exceeding Rs. 3,000, and for the two rearers at a cost not exceeding Rs. 2,000 ; and

(*e*) recurring expenditure on account of contingencies to which reference is made in paragraph 5 below.

The Madras Government sanction this proposal subject to the following remarks :—

(1) The sanction to the transfer of the 10 acres of forest land to the Industries Department is subject to the remarks, if any, which the Chief Conservator of Forests may have to offer on the proposal. The Director is requested to consult him on the point at once. The land should be restored to the Forest Department if and when it ceases to be required for the purposes of the Industries Department. The Director should also report whether the land is covered with tree growth and, if so, whether it is not possible to set the value of this against the cost of clearing. If there is no tree growth, the proposed expenditure of Rs. 2,000 on clearing requires further justification.

(2) The pay of the peons will be fixed at Rs. 12 per mensem, the rate for peons employed in the districts.

(3) The rearers and the mulberry cultivators will presumably be local recruits and therefore will not be entitled to hill allowance. If they are recruited locally their pay should be fixed with reference to current market rates.

(4) The foreman and the rearers will pay rent for their quarters when constructed, the former at the normal rate or at 10 per cent of his pay whichever is less, the latter at a rate commensurate with their pay. The Director of Industries is requested to suggest a suitable rate.

As the object of the Coonoor farm is to rear seed and also cocoons for the purpose of sale, the Madras Government are of opinion that it should be made self-supporting and that it should be treated as a commercial concern. The Director has been requested to offer his remarks on this suggestion.

The third proposal involves raising the pay of the sub-assistant to Rs. 100 per mensem, and also recurring expenditure under travelling allowance and contingencies. The Madras Government accept this proposal subject to the following remarks :—(1) Since the sub-assistant is to work entirely in the mofussil and under the direct control of the Textile Expert, his designation should be altered to Silk-Superintendent. (2) The estimates of expenditure for travelling allowance and contingencies, *viz.*, Rs. 3,000 and Rs. 7,000 respectively include provision for the Coonoor station but the Madras Government consider that the expenditure incurred on account of this station, both recurring and non-recurring, should be shown in the accounts separately from that incurred on district work. (3) No expenditure should be incurred for contingencies under district work until the Director is satisfied that private enterprise is unwilling to assist in the manner contemplated by him. (4) The sum of Rs. 7,000 estimated under contingencies should be reduced to Rs. 6,186, so that the total expenditure for the year may not exceed the provision voted by the Legislative Council for the year 1923–24. (5) As, under these proposals, the sericultural assistant will be permanently stationed at Coonoor, the Madras Government presume that he will have very little touring to do and that the amount to be allotted for travelling allowance to the Coonoor station will be inconsiderable.

The recurring expenditure in connexion with these proposals and also the non-recurring expenditure of Rs. 1,600 required for microscopic apparatus and reeling equipment is considered to be met from the provision made for the sericultural branch in the Director's budget for 1923-24. The non-recurring expenditure of Rs. 11,000 for the construction of buildings and the clearing of the forest land and Rs. 300 for fittings should be met from the provision of Rs. 26,100 made under '41. Civil Works' for 'the establishment of central and demonstration farms'.

The Director has been requested to submit at once detailed plans and estimates for the construction of the buildings sanctioned above. He is to report whether he proposes to entrust the construction to the Industrial Engineer as Public Works disburser. The sanction for the establishment referred to in the above proposals will be in force for three years from 3rd October 1923.

At the recent conference of the Royal Sanitary Institute at Hull a paper was read by Mr. Arthur Martin on the subject of "Hot Water Supply and Sludge Disposal". He showed that it might be possible to utilize the local sewage works to illuminate a neighbourhood or even to supply a number of houses with hot water—though the costly item in the latter case is the keeping rather than the making of the water hot.

Profit-Sharing in Great Britain.

For more than half a century there has been a movement in Great Britain in favour of profit-sharing. An account of the progress made, of the different types of schemes, and of some of the more important individual schemes was given in an official "Report on Profit-sharing and Labour Co-partnership in the United Kingdom," published in 1920, of which a summary was given in the *International Labour Review* of October 1921.

A Bill "to promote the more general adoption of Co-partnership between Capital and Labour by statutory and other companies" was introduced in the House of Commons by Mr. B. E. Peto on 17th April.

The preamble to the Bill is worded as follows :

"Whereas there is great loss to the industries of the country by the opposition of capital and labour ;

And whereas such opposition increases the cost of production and the prices of all commodities ;

And whereas it is desirable to restore to the wage-earning classes human interest in life and work and to place them in a position of economic equality with every other class ;

Be it therefore enacted, etc."

The Bill provides for the establishment of a body of five to be called the "Industrial Co-partnership Commissioners," to be appointed, one by the "Trades Union Council" (*i.e.*, General Council of Trades Union Congress), one by the Federation of Employers in British Industries, one by the Labour Co-partnership Association, one by the President of the Board of Trade and one, who will be Chairman, by the Chancellor of the Exchequer.

From the date of the passing of the Act any properly constituted Company carried on for profit "may, whether so authorized by any Act, charter or memorandum and articles of association or not, and without being required to alter any Act, charter or memorandum and articles of association, make provision by a scheme to be submitted to the Commissioners for the division of its profits between the capital and labour employed in or by such company.

Every such scheme shall provide—

(*a*) for the payment to all employees of the company in addition to any share in profits (hereinafter called "the employee bonus") of wages at rates not being less than the rates commonly paid in the district where the company carried on business for work of a like nature to the work performed by the company's employees ;

(*b*) for fixing a basic rate of interest upon capital invested in the company's business, such basic rate to bear relation to the risks involved in such business ;

(*c*) for the investment of some part (not being less than one-half) of the employee's bonus in the capital of the company ;

(*d*) that the employee's bonus, whether paid in cash or in stock or shares of the company, shall not be liable to forfeiture for any legal act or omission of the employee entitled thereto."

The Commissioners, in deciding whether or not they will approve any scheme submitted to them, may take into consideration the views, favourable or otherwise, of the employees of the company, if these views can be ascertained. The schemes provided for are to apply to companies engaged in production, and not to any banking, finance, insurance or investment company or to any other company which for the main purpose of its undertaking, employs only clerical labour, or to any company engaged in wholesale or retail distribution.

As an inducement to undertake co-partnership schemes, the Bill provides that every company which puts into operation a scheme approved by the Commissioners, shall have its income-tax reduced 25% and stamp duty on the issue of capital 50%. Moreover, preference is to be given in placing all contracts by any Government Department or Local Government Authority to firms or companies operating an approved scheme. The expenses of the Commissioners are to be met by a charge for certificates of approval graduated according to the amount of the nominal capital of the company concerned.

In moving that leave be given to bring in the Bill, Mr. Peto stated what he considered to be the main advantages of co-partnership, as follows :

"It lessens strife and cheapens the cost of production of all commodities. It does that by lessening the burden of supervision, lessening the waste of material, and bringing the united brain of management and labour to bear upon the problems of production, and so improving the processes and their application

to production. I am convinced that it would increase our power to sell in foreign markets, that it would thus increase employment and give to wage-earners a human interest in life and in their work, and would raise their status to an absolute equality in every respect with every other class in the country. From this, as I hold, it would follow that it must increase the profits of industries throughout the country when they are equitably divided between all who work in those industries, and that, therefore, the revenue derivable from direct taxation would be increased."

Mr. A. Hopkinson opposed the Bill, urging that it was not desirable that the weekly wage earner should invest his savings in the same business concern from which he drew his wages, because if, through any mistake of the direction, the business became bankrupt, the co-partners would lose both their employment and weekly wages and their savings as well. He expressed the opinion that the only proper way to attain the object at which co-partnership aimed was by the formation of some sort of investment trust, so that the employer, with his greater knowledge of share markets and matters of that sort, might be able to obtain for his employees a better return on their savings in safer investments than they could do for themselves.

Moreover, under the working of the modern Joint-Stock Company system it was possible to avoid making a large profit in a manufacturing company and yet to obtain a very large profit for the same individuals by means of a selling company specially created *ad hoc*, which would take over the output of the factory at low prices and retail it at high prices. Therefore the advantage which would accrue from reduced taxation owing to the co-partnership scheme might accrue really to the same individuals grouped in a special selling company.—(*Parliamentary Debates, House of Commons*, Vol. 162, No. 39, summarised in '*Industrial and Labour Information.*')

The latest cold facts concerning Mr. Henry Ford and his motor-cars are more startling than all the fiction which has been written about them. He founded his company in 1903, and by the end of nineteen years nearly 5,500,000 cars had been sold from his factory, and the cash receipts reached £600,000,000! The profits were more than £86,000,000. These staggering figures are revealed for the first time in Mr. Allan L. Benson's biography of Mr. Ford, published by Messrs. Funk and Wagnalls, New York, at 8*s.* 6*d.* net. The few friends of Mr. Ford who risked their money when the company was founded gained wealth beyond their wildest dreams. Miss R. V. Couzens, a school teacher, invested £20 and drew £71,000. Mr. Henry Ford is now the sole owner of the industries which, he informed Mr. Benson, could be capitalised and sold for £200,000,000. The writer of this new biography states: "The Henry Ford of 1914 is gone, the Henry Ford of 1914 was only a kindly man who was interested in mass production of motor-cars and the paying of high wages to his employees. The new Ford is kindly and gentle, but he pays high wages and shares profits as a matter of routine and habit. He sees the world in great disorder, and his passion of passions is to set it right." There is a widespread belief that Mr. Ford was illiterate, but this is vigorously denied. "There is not a word of truth in this," his biographer states, "I have seen and heard him read many times. I have seen him write also, and he can write as well as anybody needs to—better than the average businessman." Referring to Mr. Ford's personality the writer says: "Two personalities are reflected in his face. One is diffident almost to the point of bashfulness. The upper part of his face is distinctly feminine in type. His head, from the eyes up, has the poise that one associates with a noble woman; a woman who has suffered, endured and survived. Some one has suffered—either Ford or his mother or some ancestor. Mr. Ford wears a different suit of clothes every day, and he wears his clothes well."

London is described as the healthiest of all the big cities. Disease after disease is dwindling away in that well-drained, well-fed, and well-watered city. The afflictions which owe their strength to bad sanitation have practically disappeared. Typhoid fever has now become almost a curiosity; typhus fever, which has ravaged half of Europe in these last years, is, in England, extinct. Even consumption, the "white plague", is growing weaker, but it has made some progress lately among girls between 15 and 25. There is, perhaps, no spot on earth where the new born babe has a better chance than in the great city. Such is the opinion of the *Weekly Dispatch*, after reference to the annual report of Sir William Hamer, the country Medical Officer for London.

Bombay Salt Administration.

The Commissioner's report shows that there was a very satisfactory increase in receipts amounting to Rs. 27,14,011 during 1922–23. This increase was accompanied by an increase of expenditure amounting to Rs. 24,93,562. The latter increase was, however, mainly due to the large item of refunds amounting to Rs. 30½ lakhs as against 4.3 lakhs in the previous year. If this item is deducted there was an annual decrease in expenditure as compared with the preceding year—of roughly Rs. 1¼ lakh due to retrenchment effected by the reduction of establishment, restrictions on touring officers in order to effect economies under travelling allowance, and curtailment of grants under contract contingencies and office expenses and miscellaneous. There was a further increase of 12 in the number of pans worked at the Pritchard Salt Works, over and above the large increase of 62 pans recorded in the year 1921–22. Owing to favourable climatic conditions there was an improvement in the outturn of salt amounting to 4 lakhs of maunds, while the rise in the average storage per day and in the stock of Baragra salt at the close of the year (88.1 lakhs of maunds on June 30th, 1923 as against 62.1 lakhs on the same date in 1922) are both very satisfactory items in the year's working. There was some rise in the cost of storage due to the necessity of paying higher wages in order to attract labour which was scarce, employing a large staff to store the larger quantity of salt manufactured, and the construction of two new heaps entirely by manual labour. The special measures for improving the conditions of the Agarias made good progress during the year under report. It is unfortunate that the attempt to form a co-operative society among them failed, but in their present condition of illiteracy and mutual distrust this result appears to have been inevitable. Government are, however, pleased to note that it has been decided to start a co-operative society among the Government servants at Kharaghoda during the monsoon of 1923 to serve as an example to the Agarias of the advantages of co-operation. Excepting the Dharasna and Chharwada salt works, the working of the sea-salt works was satisfactory, the sales during the financial year being 91¼ lakhs of maunds against 77 3/5 lakhs in the preceding year. The decrease in the outturn of the Dharasna and Chharwada works was due to early rain in February, but the sales effected rose from 3.06 to 4.33 lakhs of maunds. The Government of Bombay are pleased to note that an improvement in the health conditions at Bhandup is being effected by the adoption of necessary sanitary precautions. The further diminution in the removal of refined magnesium chloride is regrettable. The decrease is attributed to foreign competition. The question of instituting a scientific investigation of the potentialities of this and other bye-products of salt in this Presidency has not unfortunately made much progress owing to the financial situation. It is, however, satisfactory to find that there has been a considerable increase in the production of refined salt, and that its quality appears to be quite equal to that of imported refined salt.

In a paper read by Mr. George A. Isaacs before the Conference of the National Association for the Prevention of Tuberculosis held in Birmingham on July 12th and 13th, he said that some authorities believe the presence of lead in the printing industry to be an important factor in the causation of tuberculosis. The Austrian Government report on health conditions in the printing trades, published in 1909, refers to the fact that lead poisoning and tuberculosis go hand in hand in this industry. Do Vooys, of Holland, regards lead as an important factor in lowering the resistance to tuberculosis. Legge and Goadby attribute the tuberculosis of printers to the vitiated air, sensitiveness to cold and fumes of gas from the linotypes. I would point out that there were more deaths from tuberculosis before linotypes were introduced than there are now that their use is quite common; also that printers' assistants do not usually work near linotypes. In America a similar view is also held, and I quote again from Hygiene of Printing Trades: "The Chief injury done by lead is probably to be found, not in the production of true plumbism, but in a lowering of the resistance to other diseases, especially to certain infections. In this way is explained the high death rate from tuberculosis." Also: "The indirect effects of lead poisoning amongst printers are far more serious than its direct effects as a primary cause of death."

Economics in the West.

London, Oct. 1, 1923.—During the last few weeks nothing short of a debacle has occurred in German finance. Indeed, so rapid have been the changes in the situation and so wildly have remedies been sought that the task of recording even day-to-day movements is almost beyond the powers of any one not in the closest touch with the inner workings of the Reich Government and actual local conditions. From the chaos, however, there have recently emerged at least two developments which, while their final outcome is still a matter of conjecture, at least furnish some guidance to a study of economic tendencies in Germany.

The first of these is the Presidential proclamation announcing the discontinuance of Government support for the policy of passive resistance in the Ruhr. It remains to be seen how long a period will elapse and what degree of readjustment in the relations between the Powers concerned will be required before that area is restored to its full productive capacity. But the decision is not without significance in connection with the Government's expressions of determination to effect changes in the relations between expenditure and revenue sufficiently drastic to produce a balanced budget within a comparatively short time.

The second development, or rather series of developments, consists of the attempts being made or proposed with the object of instituting a currency system capable of performing efficiently and economically the functions of a monetary standard and medium and giving such evidence of its powers as to reinstate the domestic means of payment in the estimation of the community. In view of the importance of public confidence in all matters relating to currency problems it is useful to consider how the loss of faith in the mark has affected the monetary situation in Germany. When it is noted that at the present time the currency in circulation in Germany amounts to considerably fewer shillings per head than the number of pounds to each individual in this country some idea can be gained of the amount of work which each mark in use is called upon to perform. In other words, the velocity of circulation of German currency is to the rate of turnover in this country as the speed of a racing car is to the progress of a farm tractor. The situation behind this simile is clear. While the value of the monetary unit is constantly falling, thrift, and even well-distributed spending, are futile, and the only possible course is to spend immediately and in such a way that, as far as possible, assets are acquired which have something more than a short term consumption value.

In circumstances such as these loss of confidence in the currency leads to loss of confidence in the Government and hence rapid changes of regime. From this arises the importance attached to currency reform by any Government which is called upon to face the problems connected with economic degeneration.

The solution proposed by the Stresemann Cabinet is an ingenious combination of various schemes, an examination of the details of which would lead only to the confusion that follows from a day-to-day perusal of newspaper despatches. It is convenient, however, to split up the proposed scheme as far as possible into its component parts according as each section of the existing or proposed monetary machinery is affected.

Existing Banks.—The Reichsbank is to be dissociated from Government finance, no more Treasury Bills being discounted there, and is to become a gold note issuing bank, performing the services ordinarily connected with commercial banking. The Reichsbank is now reported to be making all its paper mark advances on a stable value basis. Hence the apparent anomaly of a discount rate of 90 per cent accompanied by a 10 per cent rate on advances. A discount rate of 90 per cent is of course equivalent to an interest rate of 900 per cent, but even this rate is far too low to ensure any profit on discounting business. On the other hand, where the risk arising from currency depreciation is thrown on the customer of the Bank, as in the case of advances on a stable basis, 10 per cent would appear to be a high rate of interest. The institution of stable value advances may be observed as the first step towards the Bank's new status, and it is interesting to note that the German banks in general are taking a parallel course. Gold marks or pfennigs are charged for nearly all services, including the collection of interest on paper mark bonds, the amount of which is frequently below the banks' charges.

The Proposed New Institution. As a temporary expedient, there is to be created a new bank whose function is to issue a fresh form of currency, to be known as the neumark. While the details of the scheme are still subject to amendment it appears from the latest draft to hand of the Government bill that this institution is to have a capital of 2,400 million and a reserve of 800 million neumarks, one half of which will be contributed by the owners of agricultural and forest land in the shape of mortgages on their property to the extent of 4 per cent of its gold value in 1913. The other half will be raised from industry, trade and banking, the individual assessments being made by the respective industrial and trade organizations in such a way that each contributor mortgages about 4 per cent of the 1913 value of the property held. If the particular concern possesses real estate, the contribution will take the form of a mortgage thereon as in the case of agriculture, but otherwise, or if the property is insufficient to cover the levy, it will be in the shape of first charge gold mortgage bonds. Upon these securities 6 per cent interest is to be paid. Those contributing mortgages or bonds, whether individuals or corporate bodies, will become the shareholders of the institution and will be entitled to interest at a rate not exceeding 3 per cent. Three-fourths of any surplus of profits over this amount will go to an amortization fund. The bank will be free from taxation.

It is intended that the new bank is to transact business principally with the Government. It may grant interest-bearing loans to the Reich up to 1,200,000,000 neumarks within its projected life of two years, but immediately upon its foundation it is to place at the disposal of the Reich 300,000,000 neumarks. Neumark notes will be issued against a backing of 5 per cent gold-mark mortgage bonds of the new Bank based on the security of the mortgages and bonds acquired under its capital scheme. On the security of every 500 gold marks of mortgage bonds the Bank may issue up to 500 neumarks. The neumark, however, will be convertible, not into gold, but into mortgage bonds of the Bank, and these in turn may be exchanged for notes. The Reichsbank's outstanding circulation of paper marks is to be redeemed by the 300,000,000 marks of the new currency which the Bank is immediately to advance to the Government for the purpose of paying off a part or the whole of its indebtedness on Treasury Bills to the Reichsbank. While this is being achieved paper marks are to lose their legal tender character, acting merely as small change in conjunction with the new medium of payment. The latter, however, is to be granted full legal tender status.

Apart from its dealings with the Government, the new Bank will do business, according to an amendment to the bill, only with the Reichsbank. The latter may rediscount at the former bills coming into its possession through the ordinary channels of discount. To the extent, therefore, that the resources of the Bank are not utilized in giving financial assistance to the Government it will perform the functions of, so to speak, a super-central bank of issue.

The Reich Government.—The new bank of issue is intended to function during the period required for the rehabilitation of the Government's finances. It will in fact take the place of the Reichsbank, the latter's discounting of Treasury Bills being replaced by the loans granted by the neumark institution. The Government is therefore faced with the problem of balancing its Budget before the lending power of the new bank is exhausted. It will be very materially assisted, of course, by the inauguration of a currency having a greater degree of stability in its real value than that possessed by the paper mark, for it is clear that there would be a much narrower margin between the value of a tax imposition at the time of its assessment and of its collection under conditions of comparative currency stability than is now the case. The possibility that budgetary equilibrium will be reached, however, before the resources of the new bank are fully utilized depends largely on the thoroughness with which the whole fiscal system is overhauled and expenditure curtailed.

* * * *

So complicated are the issues involved and so uncertain is the political situation at the moment that it is impossible to pronounce a considered judgment upon the wisdom or expediency of the measures which have been outlined. It is reasonable to suggest, however, that the degree of success to be attained will depend not only upon the amount of support which the new scheme will enlist from the German public, but also upon the withdrawal by those countries most closely associated with the economic revival of Germany of all obstacles to her progress towards financial regeneration.

Canadian Trade and Finance.

The New Dominion Loan.

Montreal, October 1st 1923.—The refunding loan which was recently floated by the Dominion Government for the purpose of retiring obligations falling due on the 1st of November has met with unprecedented success. The maturing loan amounts to $172,471,000, but in view of the enthusiastic reception which the issue received, the Minister of Finance intimated that the amount will in all probability be raised to $200,000,000. Only ten days after the loan was placed on the market, the original amount was heavily over-subscribed, and the bulk of the subscriptions were by cash rather than by conversion. The new issue consists of two classes, *viz.*, Twenty-year bonds issued at 98.25 and yielding 5.14 per cent and Five-year bonds issued at 99 and yielding 5.23 per cent, both of which are subject to taxation. A special conversion privilege involving a concession of two weeks interest is provided for holders of Victory Bonds due November 1st, who desire to convert these into bonds of the new issue.

The unexpected success of this issue is further evidence of the increasing ability of Canada to handle her own government financing. According to figures published by A. E. Ames & Company, Dominion Government bonds are now held in Britain, in the United States, and at home, in the following proportions :—

	Amount	Percentage of Total
Great Britain ..	336,001,469	14
United States ..	210,933,000	8
Canada ..	1,935,931,576	78

Anti-Trust Legislation.

A factor of far-reaching importance in the industrial and commercial development of any country is the attitude taken by the government and people of that country towards the development of large trusts and monopolies and towards the concentration of capital in general. Among the leading countries of the world, a striking difference of viewpoint and custom exists in this respect.

In Great Britain until quite recently large corporations such as those which exist in the United States and in Germany were unknown. Soon after the beginning of the present century, however, the opportunities for the expansion of enterprise, and the gradually increasing competition of such countries as Germany and the United States, led to the concentration of capital and to the development of large corporations in Great Britain to compete with those elsewhere. Although amalgamations and absorptions have recently taken place on a gigantic scale in the banking, industrial and railway fields, the British attitude towards the movement is passive, and it is felt that the common law has sufficient control over the situation.

Not only did the German Government tolerate the development of kartels ever since the union of the German States, but it encouraged and assisted their growth with the view that they were vital to the progress of their foreign trade and to the unification of the nation. In the United States on the other hand, legislation such as the Sherman Anti-Trust Act of 1890 and the Clayton and Federal Trade Commission Acts of 1914 have been directed to prevent too serious a concentration of capital, in those cases wherein the concentration is considered to be "in restraint of trade". More recent legislation such as the Edge Act seems to indicate a modification of viewpoint.

The Canadian policy does not correspond entirely with that of any of the countries mentioned but is based largely on the experience of Great Britain. Until 1910 no special legislation had ever been introduced to curb the development of trusts, but a section of the Criminal Code, namely, Section 498, provided for the prosecution of those persons found guilty of organizing combines to restrain trade. In 1910 the Government introduced the Combines Investigation Act, which provided for the appointment of boards to investigate charges that combines were being operated in restraint of trade. This, however, was not very effective. No further legislation was passed until 1919 when two bills the "Combines and Fair Prices Act" and the "Board of Commerce Act" became law and the "Combines Investigation Act" was repealed. These two Acts of 1919 were soon declared unconstitutional, and since then no anti-trust laws have been passed until the present year when an Act to provide for the investigation of combines, trusts, monopolies and mergers was passed by the House of Commons on the 14th of May.

The outstanding feature of the Combines Investigation Act, 1923, as the last mentioned

act is called, is provision for the appointment of Registrars with whom complaints may be laid against alleged unfair combinations and who have full authority to make a thorough investigation into such charges. The Registrar is given access to the books and statements of the firm concerned, and has full powers to call witnesses and to make a thorough examination even in foreign countries, if necessary. When his investigation is complete, he reports to the Minister who has been charged by the Governor-in-Council with the administration of the Act in that particular instance. The Minister shall decide whether the case has been sufficiently studied or whether further investigation is necessary, and commissioners and experts may be appointed to pursue the enquiry. Assuming that the Minister is satisfied, he may publish the report within a period of fifteen days after its receipt, if he considers this action advisable. Further action is provided for in regard to the tariff and patent laws. The Governor-in-Council, if he is convinced that there exists any combine to promote unduly the advantage of manufacturers or dealers at the expense of the public, and if it appears that such detriment to the public welfare is facilitated by the duties imposed on any commodity, may withdraw the protection or lower the rate. He may also revoke any patent that is being used by the holder for his exclusive advantage to limit production unduly or to restrict or to injure trade. If it is shown that a definite offence has been committed, ample provision is made for penalties. In brief then the Canadian attitude towards trusts and corporations is more or less of a combination between that of Great Britain and that of the United States. It allows the development of these corporations but brings pressure to bear upon them if they are shown to be carrying on business in restraint of trade or are engaged in unfair competition.

The Silk Market.

Despite previous reports of larger damage of raw silk in the Japanese disaster, it is now learned from reliable sources that the quantity destroyed will probably not exceed 45,000 bales, an amount approximating 15 per cent of the annual production of Japan. The extent of the destruction of filatures, cocoons and stocks in the interior is still uncertain. A statement from the United States Embassy in Japan, dated September 18th, indicates that the filatures are practically uninjured. The quantity of silk in ware-houses in the United States on September 1st was 25,459 bales in comparison with an average storage at the end of each month of about 35,900 bales. Mills, however, usually carry supplies sufficient to last the industry from 30 to 40 days, and it is considered that this supply, plus the amount of storage at the 1st of September, will probably satisfy requirements until Japanese industry is rehabilitated.

It is instructive in estimating the loss to examine the relative productive capacity of Japan in relation to other silk producing countries. During the season 1920–21, the leading silk countries produced the following quantities of raw silk:

Italy	..	7,337,000 lbs.
France	..	551,000 ,,
Spain	..	134,000 ,,
The Levant	..	1,654,000 ,,
China	..	10,728,500 ,,
India	..	110,000 ,,
Japan	..	24,300,000 ,,
Total	..	44,814,500 ,,

It will be seen from the above table that Japan produced a larger quantity of silk than all other producing countries combined, namely, 54 per cent of the total. In relation to the Japanese production of some 24,300,000 lbs., the quantity destroyed was somewhere in the neighbourhood of 6,000,000 lbs.

Business Conditions in the United States.

November 1st.—In the United States the actual state of business is somewhat complex and difficult to define. The production and distribution of consumers' goods still approximates capacity, and fundamental conditions have not yet reacted in accordance with the expected business slump which was predicted for the early autumn. Nevertheless, there has been a distinct slackening in demand for certain lines of producers' goods, and this already has been reflected in a subtle undercurrent of caution and conservatism. This atmosphere stands out in sharp contrast with the marked aggressiveness of the opening months of the year. At that time increased activity in practically all lines led to a considerable accumulation of orders and sharp price rises which may or may not have involved inflation. Then came a period of more conservative business during the summer months. Wholesale commodity prices declined and manufacturing industries lowered their output. This gradual slackening of business has probably served to prevent a dangerous decline which might have resulted

from the earlier inflation, if such there was.

In the commodity markets, buyers still hold the upper hand. It is now apparent that the production of such lines as pig-iron and steel products during the first half of the year exceeded requirements. While October orders up to the 20th of the month were far in excess of those for corresponding periods in August and September, conditions are not yet satisfactory. The decline in foreign purchasing power has resulted in decreased demand for motor and railroad equipment, and the usual quietness exists in the textile lines. The demand for cotton has held up remarkably well considering the monetary conditions and the general financial situation of the continental countries. The new crop along with the carry-over will bring available supplies up to 13,000,000 or 13,500,000 bales, while the probable demand is 12,500,000 bales. It would thus appear that there will be an ample supply of cotton to fulfil the demand, and there is little reason to expect that prices will greatly exceed the present level of approximately 30 cents.

Immigration and Emigration.

Certain economic aspects of the immigration problem appear to have received less attention than was due them. It is a vitally important matter for the welfare and development of the country that a steady increase in population be maintained. In the applause which has attended the gratifying increase in immigration figures during recent months there has been a tendency to lose sight of the fact that the number of permanent emigrants from Canada to the United States is also increasing very rapidly, and during some periods far exceeds the rate of immigration.

Prior to the war, we were experiencing a very favourable immigration movement. From the beginning of the war, however, to the date of America's entrance, the number of citizens whom Canada lost was far in excess of the number of new citizens. From 1917 until the summer of 1922, Canada managed to maintain a narrow annual surplus to her advantage, but since then the number of citizens permanently leaving the country each month has continued to exceed the number admitted. During the first six months of the present year, for example, the loss exceeded the gain by nearly 25,000. The figures by months are as follows:

	Immigrants	Emigrants
January	2,602	7,863
February	3,290	7,312
March	6,748	8,896
April	9,500	16,317
May	17,767	18,658
June	13,685	18,879

The causes of the situation which we have outlined are probably rather complex, but certain economic implications are apparent and significant. The movements of population throughout the northern half of North America have been primarily westward, and secondarily towards that part of the north temperate zone which is the most intensely developed industrial area. Since Canadians are not considered "foreigners" in the eyes of the present immigration laws of the United States, the entire northern half of the continent is virtually a unit as far as movements of population are concerned. As a consequence, Canada loses a large percentage of her industrial workers. Furthermore, the business cycle in the two countries does not coincide in time. The United States emerges from a business depression some months prior to the recovery in Canada and during this period the widely advertised opportunities draw large numbers to the United States. The reverse situation does not compensate for this loss as might be expected, since even when conditions here are better, the actual state of business in Canada is not generally known or widely advertised in the United States. It is true that if this periodic opportunity did not exist for Canadians in the United States there would be more unemployment in Canada at such times, but this would undoubtedly be a less serious problem than a large scale loss of citizens.

While so much interest centres in the question of immigration, the problem which we have just outlined merits careful consideration. It may be assumed that not only are we losing citizens, but we are losing an energetic and aggressive type of citizens who would be a valuable asset to the country. Furthermore, it is not improbable that a fair percentage of the money that Canada is spending on immigration may in reality be merely bringing in people who are taking this short-cut to United States citizenship. Either we must enlarge our immigration statistics and study the causes of the drain more seriously, with a view to mitigating it, or we must depend on our immigration policy being pursued with such vigour that the margin of loss will be negligible. Fortunately the immigration figures for the third quarter of the year are most reassuring.

Books in Brief.

Short Reviews of Recent Books.

The Diseases of the Tea Bush.

By T. Petch, B.A., B.Sc., Botanist and Mycologist to the Government of Ceylon. Messrs. Macmillan & Co., Ltd., London & Bombay. Price 20*sh.* net.

This is a well-conceived and comprehensive work on the diseases of the Tea Bush written by one who may be accepted as an expert authority on the subject on which he writes. Mr. Petch's book ought to be eminently useful to the planter; it is practical, purposeful and packed with reliable information of the first-hand sort. The work of Watt and Mann, done at a time when the diseases from which the Tea Bush suffered were yet unknown, has been brought up-to-date. Seeing that the area under tea in India and Ceylon is now over one million acres, we have no manner of doubt that this book will be widely welcomed by planters in both the countries. The book is excellently illustrated and is written in an easily understandable style.

Elementary Education for Indian Boys.

By Dr. V. Varahanarasimham, M.A., Ph.D., F.R.Econ.S., etc., Inspecting Officer, Elementary Schools, Madras. With a foreword by B. Venkatapathi Raj, M.L.A., and with an appreciation by C. Y. Chintamani, Late Minister of Education, U.P. Published by A. Lakshmanaswamy Naidu, Saraswathi Publishing House, Rajahmundry. Price Rs. 2.

Dr. Varahanarasimham deserves to be congratulated on the suggestive book he has produced. The correlation he proposes between learning and earning is a crying need. There is much to be said in favour of the remodelling of Elementary Education he puts forth in this work. Apart from the question of making Education *compulsory*, there is a real need in making education and occupation going hand in hand. The plea that education, whatever it is, should befit a man to do his traditional occupation well and more profitably deserves to be widely *stressed*, for the literary type of education has gained innumerable votaries in this country to the utter detriment of its advancement on progressive lines. If a farmer's son after education cannot do his father's work better and to more profit, but only hanker after a clerk's job, it is really a sad waste of effort to have turned the boy's attention from his traditional calling. Dr Varahanarasimham is on firmer ground here than when he is criticising the spread of Compulsory Education. In this country the cry is "Education, more Education, yet more Education." We should welcome every step in the killing of illiteracy; but this does not and ought not to mean that we should run our education on wrongly co-ordinated lines. The point is that there should be greater correlation between education and employment, between learning and earning. On this point, Dr. Varahanarasimham's views are perfectly sound and deserve notice. He has hit on a cardinal defect in the existing system of education and it behoves those who desire to see it reformed to give some attention to the weighty suggestions contained in this book. We cordially recommend it to all interested in Education.

The Triumph of Unarmed Forces, 1914-18.

By Rear Admiral M. W. W. P. Consett, C.M.G., assisted by Captain O. H. Daniel, R.N. Published by Messrs. Williams and Norgate. 15 *sh.* net.

Admiral Consett's book is announced by its publishers on its "jacket" as the first book to contain the central truth about the war and his view that, had an effective blockade coupled with an embargo on British exports been enforced at the outset of the war, hostilities would have been shortened by at least two and a half years, has been hailed by some of the English papers as a great discovery. It is nothing of the kind for, even in the early days of the war, there were many who realized the vital importance to Germany of the supplies which reached her through Scandinavia and Holland and clamoured for their curtailment. But it has been left for Admiral Consett to record for the first time the exact extent to which the United Kingdom herself was supplying her enemies with the sinews of war. No one has better qualifications for doing so, for he was Naval Attaché in Scandinavia throughout the whole of the war period and for two years afterwards. His very detailed examination of Scandinavian imports and exports shows how little foundation there was in fact for the assurance, with

which British politicians comforted the people from time to time, that Scandinavia was only getting her normal supplies and that consequently nothing could be escaping to Germany. Even had the statement that Scandinavian imports were no more than normal been literally true, there would have been a *suggestio falsi* in it for, at the moment it was made, Swedish spindles were idle whilst the wharves and quays of Swedish ports were choked with cotton from Germany, coffee, the favourite beverage of the Swede, was unobtainable in Swedish restaurants when Sweden was exporting large quantities to Germany and so on. But it was not true as the figures with which Admiral Consett liberally sprinkles his arguments conclusively show. Whether it be cotton, coal, oilseeds, metals, tea, coffee or cocoa, they all tell the same tale. In 1915 the British exports of copper to Sweden were double those of 1913 whereas that country was sending to Germany three times the amount she sent before the war. In the same year, Swedish imports of cotton were 123,200 tons against 24,800 tons in 1913, of which 10,900 and 1,940 tons respectively were contributed by the British Empire. Swedish exports to Germany and Austria increased from 236 tons in 1913 to 76,000 tons in 1915. Oilseeds have a double value arising from the use of the oil extracted from them in the manufacture of explosives and of the residuary oilcake for fattening cattle. The imports into Denmark of oilseeds in terms of oil rose from 48,209 tons in 1913 to 71,649 tons in 1915, the British Empire supplying 5,895 and 20,646 tons respectively. And so on down the whole dreary list, Admiral Consett shows that we were getting nothing back for this. From 1915 to 1917, England lost an average of about 105,000 tons of food a year from Denmark as compared with 1913 whilst Germany gained about 140,000 tons a year. Even if it be admitted that the hands of United Kingdom were tied at the outset by her unwise decision to be bound by the terms of the Declaration of London, which died an unhonoured death in June 1916, there was nothing to prevent her doing what she would with her own. In coal, she had the most potent weapon that any nation could desire. Scandinavia would have "eaten out of her hand" had there been any question of stopping coal supplies. Admiral Consett pointed this out time and again to the home authorities but nothing was done to stiffen up what small measure of control over the destruction of coal exports there was except for Norway, the country for which there was least need of it for, as he reminds us, Norway was pro-British, Sweden pro-German and Denmark pro-Danish. But, as the loyalists in South Ireland know, it is often Britain's way to be tender to her enemies at the expense of her friends. In this instance, ignorance seems to have been at the bottom of the trouble. Geography is not a strong point with British statesmen. Palmerston once when threatened with the Secretaryship of State for the Colonies had to look upon the map where they were. Cilicate has been confounded with Silesia and Mr. Lloyd George had never heard of Teschen. How then could Britain's wise men be expected to understand what the proximity of Scandinavia meant to Germany? They might have trusted the man on the spot for Admiral Consett's book shows that he was worthy of trust. He has drawn up a damning indictment. It deserves, but we fear it will not get, the honour of an official reply.

The "Orient" Magazine.

We have received a copy of the "*Orient*" Magazine published in New York. The *Orient* presents in its pages something that is distinct from other periodicals about the East published in the U.S.A. Under the editorship of Mr. Hari G. Govil of Hindu University, Benares, and with the co-operation of oriental scholars and orientalists from all parts of the world the *Orient* aims to bring about a better acquaintance of the art, literature, philosophy, culture of the East and thereby promote a better understanding between the East and the West. The *Orient* is a magazine with a unique field and function—that of binding Orient and Occident into one spiritual brotherhood by presenting and interpreting the ancient Beauty and Wisdom of the East in terms acceptable to the Western understanding, thereby showing them to be one with the highest beauty and the deepest wisdom to which European culture has attained. In order to bring together the elite of the East and the West in the field of art, literature, philosophy and science, *Orient* Magazine has created an Annual Prize of $1,000 for *International Essay Contest.* One of the features of this international contest is the universality of language. The essay may be written in any language but

the writer must submit an English translation done by any one he or she may choose.

Indian Art and Artcrafts.

By various Writers. Published by The Theosophical Publishing House, Adyar, Madras.

In this publication are included four lectures given in connection with the Arts and Art-crafts Exhibition held during the Theosophical Society's Annual Convention, in December 1922, at Adyar, Madras. Among the contributors are the following :—Messrs. Stella Kramrosch, Ph.D., R. Srinivasan, M.A., T. G. Krishnaswami Pillai and W.D.S. Brown. Their respective subjects are :—The Significance of Indian Art and Recent Movements in Western Asia, by Dr. Stella Kramrosch ; Indian Music of the South by Mr. Srinivasan ; The Art-crafts of South India by Mr. Krishnaswami Pillai ; and, Guild Socialism and Indian Handicrafts by Mr. Brown. Dr. Annie Besant writes an appreciative preface, in which she enlarges *inter alia* on the "insight as rare as it is luminous " of Dr. Kramrosch's lectures. It is impossible not to agree with Dr. Besant in estimate, for Dr. Kramrosch speaks not merely from the head but also from the heart. Her knowledge is as profound as it is thoroughly scientific. The other papers included in this Volume touch in intelligible form on different aspects of Indian arts and art-tracts. They are suggestive to a degree. The inherent worth of the Volume is enhanced by the illustrations included in it. We should be glad to see the book sell well, for it deserves wide publicity.

The Jayaji-Pratap.

The Birthday number is as usual replete with interesting articles. The coloured likeness of H. H. The Maharaja Madhav Rao Scindia, Alijah Bahadur, is an excellent one. Dr. Annie Besant contributes the opening article in which she writes appreciatively of H. H.'s beneficent activities in the State. The number is fully illustrated and will repay persual.

Acknowledgments.

1. *Rice in Malaya.*—(Bulletin No. 35, Dept. of Ag., F.M.S. & S. S.) By H. W. Jack, B.Sc., B.A., Economic Botanist, Kuala Lumpur, F.M.S. [A notable work by an expert. A Bulletin of great practical utility.]

2. *Wet Padi Planting in Negri Sembilan.*—(Bulletin No. 33, Dept. of Ag., F.M.S.) By D. H. Grist, Agricultural Inspector, Kuala Lumpur, F.M.S. Price 1 Dollar. [An excellent record of work done and observations made. Water control and selection of fresh strains are suggestively dealt with.]

3. *The Mysore Legislative Council and The Representative Assembly Manual, Vol. I.* Government Press, Bangalore. Price Re. 1. [A handy and timely publication of the new Reforms, with the Dewan's remarks, H. H. The Maharaja's Proclamation, the Assembly and Council Regulations, and relative Government Orders.]

Topics in the Journals.

1. *The Indian Economic Society. March-June* 1923.—Wealth and Welfare of the Punjab by James Kellock.

2. *The Bombay Co-operative Quarterly, Sept.* 1923.—Need for Trained Secretaries in Rural Societies.

3. *The Social Service Quarterly, October* 1923.—The Future of Primary Education in the Bombay Presidency.

4. *The Journal of the Ministry of Agriculture, Nov.* 1923.—Peppermint : Its Cultivation and Distillation by A. H. Hoare.

5. *Agricultural Journal for Nov.* 1923.—Furnaces for the Manufacture of Gur.

6. *The Journal of the Mysore Agricultural and Experimental Union, Vol. V, No.* 3.—Sugarcane in Mysore by Venkata Rao K. Badami, L.Ag.

7. *The Young Men of India, Oct.* 1923.—William Miller of Madras : Personal Reminiscences, by V. Chakravarti.

The Madras Report on the working of Joint-Stock Companies for 1922–23 says :—Much depends on the size of industries and the sufficiency of capital and if Madras occupies a subordinate place in these respects it is because of the formidable jute industry of Bengal and of the gigantic cotton industry of Bombay, which have made both the provinces what they are. Moreover, Madras is not so well situated as Bengal or Bombay with respect to its exports and imports. The industrial and commercial expansion of this Presidency must perforce be a work of gradual growth. The foundation for such expansion has already been laid especially by European firms and to the credit of the Buckingham and Carnatic Company, Limited, it must be stated that it has the highest paid-up-capital (110.48 lakhs).

of

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

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The Mysore Constitutional Reforms, 1923.

AN EXPOSÉ.

Introduction.

In writing a short account of the Reforms recently promulgated in Mysore, the author has been moved by a genuine admiration both for the ability with which the Administration of Mysore is carried on and for the vitally modern spirit which actuates her Executive Officers as a whole. The fact that Mysore is entirely governed by Indians and is, at the same time, managed so efficiently as not only to constitute a serious object lesson to British India, but also actually to give her points on several matters has been chiefly responsible for the creation and the fostering of a patriotic conceit in most Indians outside of its territorial limits. It has been the present writer's good fortune to know some of the more important officers of the State rather intimately and when he suggests that Mysore is really fortunate in its Civil Service and in the work that its servants are doing for the whole of India as good examples of the modern spirit of efficiency and integrity which actuates New India generally, he hopes he will not be accused of either insincerity or flattery.

The recent Reforms are, I think, still another feather in the cap of the Mysore Administration. The only charge that could have been preferred against the "Mysore Bureaucrats" in the olden days might have been that they were arrogating to themselves too much of power. The Reforms have, I think, dispelled even that notion from the minds of fair-minded critics. These Reforms have come almost unbidden; there was little or less than little non-official agitation regarding them. The Government took the initiative in the matter of their own accord. And they have confirmed the conviction in one that it is not so much as mere efficiency as patriotism that will in the long run affect the good administration of a State.

This little pamphlet is written with a view to afford a bird's eye view of the Reforms and to place before the public a plain and simple account of what has been done. It is intended mainly for those who have no time to study the official publications on the subject or find them too dry and technical, but who yet wish to know the nature of the changes introduced in Mysore. All technical details are, therefore, omitted and only salient points mentioned in order to enable the reader to form correct impressions.

1.—Certain Outstanding Features.

Women's Franchise.

There are a few outstanding features of the Reforms which, at the outset, may be taken out of their setting in the scheme and explained. Of these we shall first take Women's Franchise. India is a country where women have been denied their rightful place in political life. They were at best treated as domestic queens. The province of political life, its anxieties as well as its glories, were reserved for men. But thanks to an entirely different and nobler conception about this question permeating Indian society to-day, the Indian women's position

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public life has been recently sought to be improved. Madras led the way and enfranchised women. Bombay followed in her wake. But the example has not spread as one would have supposed or desired, Bengal declining to come into line and most of the other provinces still lagging behind.

What the Mysore Reforms have done in regard to this matter is to have removed, in so far as the Franchise is concerned, all political disabilities attaching to women. The Reforms provide that the Franchise shall be extended to women possessing the qualifications prescribed for voters. Henceforth, it is open to women to shape the policy of the Government by exercising their Franchise and voting for the candidates who, in their opinion, best satisfy the requirements. It need hardly be added that this is a coveted privilege bestowed on women in Mysore and one too that will live in Mysore Constitutional History. It is a recognition, and a right one at that, of woman's rights and of woman's equality with man in political life. Mysore thus comes into line with Madras and Bombay and most of the other civilized countries of the world.

The Franchise.

The removal of this disqualification and certain other innovations brought about by the Reforms in regard to widening the electorate have had considerable effect on the franchise. It has, for example, increased the electorate by more than four times. Roughly speaking, the number enfranchised before the Reforms was 28,000, but now it has increased to over 1,10,000.

An understanding of the qualifications of the voters and candidates to the Representative Assembly previous to the Reforms is necessary for the full realization of the change introduced by the Reforms. Hitherto, every person who was paying a land revenue of fifty rupees and more per annum to the Government, or who was paying an annual rent of not less than Rs. 50 to the holder of an alienated village or Municipal tax of ten rupees and more was enfranchised; as also every person who was the owner of an entire Inam village with a total *beriz* of Rs. 250 per annum, every graduate of a University who ordinarily resided in the constituency and every person who was a retired or pensioned officer of the Mysore State Troops. These qualifications, at least in the case of the voters, are admittedly high, in view of the prevailing economic condition of the people. In fact, out of a total population of nearly six millions in the Mysore State, only 28,000 had the necessary qualifications to exercise the vote. Considering the fact that enfranchising the people of a country has a great political value and that the power to vote tends to make the voter study political problems at first hand, it was absolutely necessary that the franchise should be extended to its greatest possible limit in Mysore.

This is what has been done by the new Reforms. The franchise has been extended as far as it could justifiably go at present. The existing property qualifications have been reduced by one half in the case of voters to the Representative Assembly. The franchise has been extended in the case of both the Assembly and the Legislative Council to all persons paying income-tax. It has been extended, as already described, to women, provided they possess the qualifications prescribed for voters. This arrangement will entitle persons paying land revenue or rent of not less than Rs. 25 per annum or Municipal tax of not less than Rs. 5 per annum and persons who own one or more entire Inam villages with a *beriz* of not less than Rs. 125 per annum to be both voters and candidates to the Representative Assembly. The result of these changes is, as already stated, that whereas the electorate consisted, under the old rules, of about 28,000 persons, it now consists of over 1,10,000 persons.

Direct Election.

Another great change effected by the Reforms is the introduction of direct election in place of a mixture of direct and secondary elections. It may be explained in this connection that a secondary election is a method of electing candidates to the Assembly by a body already in existence and not directly by the voters. Under the old (and now superseded) Constitution of the Assembly, while the Taluk representatives came in by

direct election by the Taluk voters, in the case of the representatives of urban areas, the election was secondary. The members, in this case, were returned not by the voters in these areas directly but by the Municipal Councils. In the case of the members deputed by District Boards, the representation was even more remote, since these Boards included members returned by secondary election through the Municipal Councils and Taluk Boards. A mixed electorate consisting of direct and indirect constituencies fails both on theoretical and practical grounds to secure the true representation of the people. In the new Mysore Constitution, therefore, the anomaly has been removed and direct election has been substituted in its stead.

Communal Representation.

Communal representation is a question that has obviously received the most careful attention at the hands of the Mysore Government. Admittedly it is the *vexata quæstio* of Indian politics, because unfortunately communal representation is at the present time as necessary in India as it is injurious. Most people in India, it is clear, have more of communal sense than of political consciousness developed in them. At present, it is not expedient for any Government in India to go against a sentiment so deep and general as the communal feeling. All the same, there are serious objections to which communal representation is subject. One of them is that instead of looking at a problem from the political angle, a constituency is likely to look at it from a communal standpoint. And in the long run, a Legislative Council chosen by communal electorates will, instead of containing the best minds or men with the best interests of the country at heart, consist of men who give themselves fancy names and play upon the communal feeling of the people. That hardly serves any political purpose. A politician's charge is not to secure loaves and doles for his community but to look after the interests of the State as a whole. Besides, communal representation is sure to create and feed sectional jealousies, already so widely prevalent a political disease in India. This aspect of the question has been taken into consideration by the Montagu-Chelmsford Report but yet the Government of India Act of 1919 has allowed, in certain cases, communal representation without adequately providing for the future and gradual elimination of the evil. By adopting a system of representation through recognized Associations, the Mysore Government, on the other hand, have effected a compromise which is calculated to do away with the system altogether in the long run and at the same time provide for the political protection of the minorities in the State. The best method of dealing with communal representation is to help to remove the communal consciousness. In the changes introduced by the New Mysore Constitution, it is this aspect which has been emphasized.

In this arrangement, a certain number of seats in the Assembly and the Council is guaranteed to certain communities. But these candidates will not get in through communal constituencies. All the candidates will have to get in through the general electorates but in case it is found that the number guaranteed for a community does not get returned through the general electorates, then provision is made to make up the number either through representatives elected by recognized associations or by nomination by the Government, if necessary. In this manner, 15 seats for Mahomedans, 5 for Indian Christians and 3 for the Depressed Classes have been guaranteed in the Representative Assembly. A similar privilege is accorded to them in the Legislative Council as well, though in view of the smaller size of that body, the number of seats set apart for them is proportionately smaller. The reason for giving a guarantee to these communities is that they are distinct social units and that they may not ordinarily get adequate representation through the general electorates. The guarantee provided is intended solely as a security for adequate representation and it is hoped that in course of time the guarantee will become superfluous, as with the spread of education, the growth of political consciousness and with greater homogeneity

all communities will return through the general electorate the best men available.

Let us examine what the results of this arrangement are. Let us, for example, take the Moslem community who are guaranteed 15 seats in the Representative Assembly. Suppose, when the whole of the candidates have been returned through the general electorate, it is found that only ten Moslems have been elected. It need hardly be said that this number does not represent adequately either the community's numerical strength, their influence or their social position in the State. Then five more seats will be given to them to be filled by representatives of recognized associations of Mahomedans and, if necessary, by nomination. So also, in the case of the Indian Christians and the Depressed Classes. It must be clearly noted that it is only a minimum that is fixed. There is nothing to prevent a hundred Moslem representatives getting into the Representative Assembly through the General Electorates. Every Mahomedan, Indian Christian and Panchama voter will come into the general electorate and may vote for the best candidate in the field, resting assured that his community representation is safe through other methods. In the long run this will tend to remove the communal consciousness and with it the need for communal representation.

LABOUR REPRESENTATION.

One other point may also be mentioned in connection with the general features of the Reforms. And that is the representation of Labour that has been provided for in it for the first time in the political history of India. The Government proceedings published in connection with the Reforms specially mention that Labour has been recognized as one of the special interests to be represented, both in the Legislative Council and the Representative Assembly. Special provision has been made for the representation of such interests as Factory and Mining Labour as soon as organizations are formed to develop these interests. Thus, Mysore has once again substantiated her claim for being the Model State. When we consider that Labour is likely to play an important part in the life of any country that is becoming increasingly industrial, the appropriateness of the measure adopted in Mysore will be evident. To-day Labour constitutes His Majesty's Government in the British Parliament. To-morrow it may be the turn of India. The time has passed by when Labour could be treated with conceited indifference in any country.

2.—Yesterday and To-day.

THE REPRESENTATIVE ASSEMBLY.

Until recently the Representative Assembly of Mysore was a very unique body. Its peculiarity consisted in the fact that most of the representatives who constituted that body were people who were chosen from the middle, lower and agricultural classes and not ordinarily the upper classes of Mysore. It is not so, for example, with representative bodies generally in British India. There, it is more or less the upper and the English educated classes who constitute the Legislative Councils. And so the Mysore Representative Assembly had one advantage over democratic bodies elsewhere. It was instrumental in keeping the Government well posted as to the needs and requirements of the ryots. Also, these representatives had been gaining valuable political experience, which was likely to stand them in good stead.

The Assembly had existed for forty-two years, having been established in 1881. The object of the Assembly, when it was first brought into existence, was mainly to make the views of the Government known to and appreciated by the people for whose benefit they were intended. The object was to a large extent achieved. The close association of the members of the Assembly with the Government helped to remove all misapprehensions in regard to Government's views and actions and to convince the people that the interests of the Government and those of the people were not different. In course of time, further privileges were granted to the Assembly with a view to secure in an increasingly large measure the goodwill and co-operation of the people of Mysore in the administration of the State. In the beginning, the members of the

Assembly were nominated by the Deputy Commissioners. But after a decade, the principle of election was introduced and by a gradual process of evolution, the powers of the Assembly were extended so as to include, at the time of the Reforms, the functions of representation of grievances and expression of opinions on matters referred to them by the Government, discussion of the budget and the right of interpellation.

Two things emerge from the history of the Assembly briefly surveyed above. One is that there has been a gradual development of the powers of the Representative Assembly and the other that the members of the Assembly have shown their ability to discharge the increased trust placed in them. But the time has come, apparently, for making a further advance. The political aspirations and forces working in different parts of India have increased the sense of corporate life and political consciousness of the people of Mysore. Means have had to be found for exercising these newly acquired qualities of the people.

A careful examination of the chief provisions of the reformed Representative Assembly shows how Government have essayed successfully this task of theirs. The Government have, in the first instance, decided to place the Assembly on a statutory basis and thus provide it with a definite place in the Constitution. By this arrangement, the Assembly receives an independent status in relation to the other public bodies. But the full significance of this reform is that while hitherto it was merely optional on the part of the Government to summon the Representative Assembly, they were not legally bound to do so. But now, thanks to the Reforms, the Government are bound to summon the Assembly at the appointed time and place. Further, all provisions connected with the Assembly also assume a legal aspect.

The membership of the Assembly is, according to the Reforms, confined to non-officials. The total number of members of the Assembly will ordinarily be 250, but the Government have power to raise the number to 275 for the purpose of removing inequalities of representation or for providing for the representation of future constituencies. Not less than 150 members will consist of representatives of rural areas and not less than 30 and not more than 50 of urban areas. Fifteen members will be representatives of approved special interests, and not less than 25 members will be representatives of minorities. The Dewan will be ex-officio President of the Assembly and the Members of Council, Vice-Presidents. The Assembly will ordinarily sit for three years but the Government may extend the period by one year. When any bill is proposed to be introduced into the Legislative Council, the general principles underlying it will have to be placed by the Government before the Assembly and its opinion ascertained in regard to them. No new tax will be levied unless the opinion of the Assembly in regard to it has been ascertained. The annual State budget will be laid before the Assembly and, subject to certain necessary restrictions, the Assembly will be at liberty to discuss it as a whole. Any member may move a resolution in respect of the budget, provided that it has reference only to the general principles and policy underlying the budget and not to any particular grants included in it. Subject to certain conditions, a member of the Assembly may ask questions, move resolutions or make representations to the Government on any matter relating to the Administration of the State. The opinion of the Assembly, on all matters before it, has now to be ascertained by votes. The constitution and the powers of the Assembly are, it will be observed, far in advance of its constitution and powers prior to the Reforms.

The Legislative Council.

The Legislative Council is a differently constituted body from the Representative Assembly. It consists of the upper and more educated classes and corresponds to the Legislative Council of British India, while it may be said that the Representative Assembly corresponds to the Indian National Congress in its personnel.

The Legislative Council was established in 1907, in order to associate with the

Government a certain number of official and non-official gentlemen qualified by practical experience and knowledge of local conditions to assist the Government in making laws and regulations. The functions of the Council extended, at the time of the Reforms, to interpellation, resolutions, legislation, and discussion of the budget. In so far as legislation was concerned, certain important subjects were declared to be outside the competence of the Council. The Council had not power to modify or add to the budget or even to move resolutions on it. The number of questions that might be put at a session was limited to 20. Resolutions had to be in the form of specified recommendations and not more than twelve could be moved at any one session of the Council. The Council was, on the whole, merely an advisory legislative body with very limited functions and powers.

Under the Reforms, the Legislative Council has been enlarged and its constitution revised so as to increase the elected element and ensure a statutory non-official majority. Provision has been made, as in the case of the Representative Assembly, for the representation of special interests and of minorities. The Council will henceforth have the power of voting on the annual State Budget by major heads, save those specially excluded from its cognizance. The list of subjects excluded from the purview of the Legislative Council in respect of legislation has also been curtailed. Exclusive of the Dewan, who will be the President, and the two Councillors, who will be *ex-officio* members of the Legislative Council, its total strength will be 50. Of this not less than 30 or 60 per cent will consist of non-official members and the remainder of official members nominated by the Government. Not less than two-thirds of the non-official members will be elected. The remainder will be nominated by the Government for the representation of special interests and minorities. The number of members to be returned to the Council by the Assembly has been increased from four to eight. It is provided that for the purpose of any bill to be introduced into the Council, the Government may nominate not more than two persons having special knowledge of the subject in hand as members of the Council. The Council will ordinarily continue for three years but the Government have power to extend the period by one year. All questions before the Council are to be determined by a majority of votes. Subject to certain necessary reservations, the Council will have the power of making laws and regulations. When any bill has been passed by the Council, it becomes law after receiving the assent of His Highness the Maharaja. The annual expenditure and revenue of the State will be laid in the form of a statement before the Council each year and the proposals of the Government for the appropriation of revenues and of other moneys will be submitted to the vote of the Council in the form of demand for grants. The Council may assent to or refuse a demand for grants or reduce the amount therein.

These are, generally speaking, the powers with which the new Legislative Council is invested. But there are certain safeguards also. For example, no measure of any description is to be introduced into the Council without the previous sanction, in writing, of the Dewan. It is not lawful for the Council to consider any measure relating to the Ruling Family, the foreign relations of His Highness the Maharaja, the Treaties now in force or hereafter to be made and the two Regulations relating to the Council and the Assembly. In respect of matters excluded from the cognizance of the Council, the Government have power to frame any measures which, after receiving the assent of His Highness the Maharaja, will have the force of law. In regard to the powers vested in the Council to vote on the Budget, provision is made for the Government to have power to appropriate a demand, in spite of an adverse vote of the Council, if the Government consider that the expenditure provided for in the Budget presented is necessary for the carrying on of any department or for the discharge of Government's responsibility. In such cases, the Government have reserved power to act as if the demand has been assented to by the Council, notwithstanding its refusal to grant

or its reduction of such a demand. The Government have also power, in cases of emergency, to authorize such expenditure as may be necessary for the safety or tranquility of the State or for the discharge of Government's responsibility in any way.

It will be observed that the most important power given to the Council is in regard to the Budget. In spite of the apparent restrictions placed on certain functions of the Council, it is a real power that has been vouchsafed to it in regard to this matter. Actually it is the Budget that matters in democratic institutions like the Council. "No taxation without representation" is an old cry and it is as valid to-day as it was two centuries ago. The idea underlying it is that the people who provide the revenues of a State should control, by their representatives, the expenditure of those revenues. It is the very foundation on which the great edifice of democracy is erected. The Mysore Reforms concede the principle and provide that under ordinary circumstances, unless the Legislative Council passes the Budget, the Government will not be in a position to appropriate the necessary moneys for expenditure. While resolutions adopted by the Council can have effect only as recommendations, voting or refusing a grant has a binding effect on the Government, which can be annulled only by the exercise of a specific power of the Government for a specific reason. Further, voting by major heads imposes an important limitation on the Government's powers of reappropriation. Reappropriation by the Government from one major head to another will no longer be possible. The Legislative Council in future will, with its non-official majority, therefore, exercise a large measure of control over the financial policy of the Government.

In so far as the financial restrictions placed on the Council are concerned, it may, perhaps, be pointed out that all governments retain power in cases of emergency to authorize such expenditure as may be necessary for the "safety and tranquility" of the State and for the carrying on of any departments. And as regards the list of items connected with expenditure which is excluded from the vote of the Council, it may also be pointed out that in some countries items of expenditure, such as interest and sinking fund charges on loans, expenditure of which is prescribed by any law, as well as the salaries and pensions of certain classes of Government servants, are outside the scope of the Legislative Council.

Qualifications of Voters.

A word must be said about the qualifications of the voters and candidates to the Legislative Council. In view of the difference in the functions and the powers of the Council and those of the Assembly, it is considered that the franchise should also be different for these bodies. It has, therefore, been decided to fix the property qualifications of voters to the Legislative Council twice as high as those of voters to the Representative Assembly.

The following persons are qualified to stand for election to the Legislative Council :—

(*a*) Every person

(i) who is the registered occupant of land situated in the constituency and assessed to land revenue of not less than Rs. 50 per annum payable to Government ; or

(ii) who is a *kadim* tenant paying an annual rent of not less than Rs. 50 per annum on account of land held by him in the constituency to the holder of an alienated village, to which the provisions of Chapters VIII to X of the *Land Revenue Code* have been applied ; or

(iii) who pays annually *mohatarfa* tax or municipal tax of not less than Rs. 10 to a Municipal Council.

(*b*) Every person who is the owner of one or more entire *inam* villages, with a total *beriz* of Rs. 200 per annum, and who ordinarily resides in the constituency.

(*c*) A Graduate of any Indian or English University of not less than ten years' standing, who has been a resident in the constituency for at least three years previous to the election ; or

(*d*) Any person who pays an income-tax of Rs. 100.

It will be noticed that prior to the Reforms, the qualifications of candidates were higher than those of voters. But now practically the same qualifications are prescribed for both.

Standing Committees.

An outstanding feature of the Reforms is the close connection that has been established between the representatives of the people and the Government in order that they may influence the everyday administration of the State. Standing Committees consisting of a prescribed number of members elected by the Representative Assembly and the Legislative Council will be formed to help the Government in an advisory capacity. The history of the Standing Committees of the State is interesting. Government had for a long time past recognized the desirability of associating representatives of the people with officials in the consideration of important measures. Committees consisting of officials and non-officials have, in pursuance of this desire, been constituted to deal with a great variety of subjects. The late Budget Finance Committee is a case in point. The Government considered, however, that permanent Committees constituted on a popular basis and possessing defined powers and functions would be more useful. Consequently in order to enlarge the opportunities of non-official representatives of the people to influence the administration of the State generally, Standing Committees consisting of representatives of the Legislative Council and the Representative Assembly were promised by the Dewan.

The members of the Committee are, according to the Reforms, to be chosen from a panel elected from and by the members of the Representative Assembly and the Legislative Council. Meetings of the Standing Committees are to be held under the Chairmanship of a Member of the Government and at such time as might be decided by the Dewan. All major questions on general policy on which the member in charge of the Department concerned desires the advice of the Committee are to be placed before the Standing Committee.

The Government have ordered that for the present three Standing Committees may be formed, one in connection with the Railway, Electrical and Public Works Departments, one in connection with Local Self-Government and the Department of Medicine, Sanitation and Public Health and the third in connection with Finance and Taxation. Government may, at their discretion, appoint additional Committees for other Departments or add other Departments to the above Committees. Each Standing Committee will consist of six members and having regard to the larger strength of the Assembly and its predominantly non-official character as compared with the Legislative Council, four of the members will represent the Assembly and the remaining two the Legislative Council. The members will be selected by Government out of a panel of 15 members elected by ballot by the Representative Assembly and 10 members elected in the same manner by the non-official members of the Legislative Council.

Economic Development Work.

With the object of associating prominent agriculturists, merchants and others with the officers of the State, in their deliberations connected with the Economic Development of the State, the Mysore Economic Conference was started in the year 1911. Since then the constitution, functions and the personnel of the Conference have changed from time to time.

Under the Reforms, the Economic Conference and the Development Boards connected with it have also been reconstituted and continued in close relationship with the Representative Assembly and the Legislative Council. There are three of these Boards, one for Education, one for Agriculture and the third for Industries and Commerce. The existing Board of Scientific Advice is abolished as a separate body and its work will be taken up by a Sub-Committee consisting of not more than seven members of the Industries and Commerce Board and such Scientific experts as may be co-opted by them. A Conference of these Boards will be held at least once a year under the

Presidency of the Dewan and all the members of the Boards, the Deputy Commissioners of Districts and such other persons as may be specially selected by the Government will take part in it. The total number of members of the Conference will not exceed 100. An important feature of the new organization is that the representatives of the various interests and agencies represented on the three Boards will, as far as possible, be elected.

DEVELOPMENT OF LOCAL SELF-GOVERNMENT.

Under the scheme of Constitutional Developments giving larger powers and functions to the Assembly, it is said that it will not be found convenient, on account of the large volume of business to be gone through, to include, as hitherto, all representations, whether of a general or of a local character. In the Proclamation of His Highness the Maharaja promulgating the Reforms, it has accordingly been decided that the constitution, functions and powers of Municipal Councils, District and Taluk Boards and Village Panchayats should be revised so as to give them the largest possible measure of responsibility and autonomy in the administration of local affairs. As a consequence, the Government have undertaken the necessary amendments to the existing Regulations, in order to give full effect to the policy indicated in the Proclamation. In order to work out the details, a Special Officer has already been appointed to outline a scheme for the Development of Local Self-Government. And in the meanwhile, arrangements are understood to be made under the existing Regulations for District Boards to pass resolutions on questions connected with the administration of the District. All local subjects, hitherto brought up for consideration by Government in the Representative Assembly, will in future be dealt with by the local bodies concerned.

3.—Summary.

FINAL WORDS.

These, then, are the chief features of the Reforms. A brief summary here, I trust, will not be out of place. First, the property qualifications of voters to the Representative Assembly have been reduced by half. The disqualification of women on the ground of sex from exercising the franchise has been removed. In the case of the Representative Assembly, the total strength of the electorate will, it is expected, rise from 28,000 to 1,10,000. The unhealthy combination of direct and indirect elections to the Representative Assembly has been removed and direct election alone recognized. Labour has been recognized as one of the special interests to be represented, both in the Representative Assembly and the Legislative Council. Adequate provision has been made for the representation of minorities under a scheme that seeks to avoid the perpetuation of communal differences. Communities which form special social units and are not likely to get their due share of representation are afforded special protection by the guarantee of a fixed number of seats. The Representative Assembly has been given a definite place in the constitution and its position as a popular body has been recognized by statute. The strength of the Legislative Council has been substantially raised and given an increased elected element with a non-official majority. It will, in future, have an effective voice in determining the Financial policy of the Government. Standing Committees have been formed, with a view to associate the representatives of the people in the ordinary administration of the principal Departments of Government. The Development Boards constituted some years ago to secure the co-operation of the people in promoting the economic progress of the State have been reconstituted in close relation to the Representative Assembly and the Legislative Council. Steps will shortly be taken for granting to local bodies as large a measure of responsibility as possible to deal with matters of local interest.

The outstanding feature of the Reforms is that they provide the people with the means of influencing the administration effectively. The old days in which representatives were merely allowed to bring the complaints and the needs of Districts or of communities, about which all that they got were sympathetic replies from the President, could not create a feeling of responsibility and corporate life. All the different

bodies in the State have been co-ordinated so as to form a connected democratic whole. The Standing Committees are closely related to the Representative Assembly, the Legislative Council and the Government. The Development Boards have been so reconstituted as to render possible a close relationship with the Assembly, the Council and the Government. The Assembly elect a certain number of members to the Council. The Assembly and the Council elect a certain quota to the Standing Committees. Thus, the Council and the Assembly are, by representation, coming into permanent connection with the Government. The idea of providing to the people administrative and political training is writ large on every page of the new Reforms. For power, it may be said there is enough of it provided in the Reforms for those who will utilize it wisely. For training, there are plenty of opportunities for that too provided. For trust in the people by the Government, there are plenty of indications of that as well. Those who criticise adversely the Reforms are apt to forget one important factor. It is that there is nothing like rivalry for power in the State of Mysore between the Government and the people. In an Indian State, particularly in Mysore, the Rulers and the Ruled form a homogeneous whole. Their interests are the same. There is no mistrust, no conflict of interests, no economic insiduousness here. The very fact that most of the Reforms in the State have come through the initiative of the Government and not through that of the people is certainly sufficient indication of this absence of rivalry between the Rulers and the Ruled. There is no reason, moreover, for the people to treat the Government with any degree of suspicion. The Reforms ought to satisfy all except those with whom discontent is a chronic malady. Trust has been reposed in the people, in their patriotism and in their capacity. What is expected of the people is that they will reciprocate these sentiments and justify the Reforms by availing themselves of the franchise, and the powers provided for them.

His Highness the Maharaja in his gracious Proclamation has invited his people to do so in this wise :—"I now invite my people," he has said, "to utilize the larger opportunities of public service and usefulness to the State, which I am now conferring upon them, and I have every confidence that they will respond to my call with the same loyalty and sense of responsibility as in the past and in a spirit of mutual toleration and goodwill. It is my earnest prayer that these measures now inaugurated may, under divine guidance, promote the happiness and prosperity and ensure the progress of all classes of my subjects." Let us hope the reciprocation will be both ample and dutiful.

SCRUTATOR.

Politics in Brief.

Herbert Spencer.—Progress.....is not an accident, but a necessity.

Herbert Spencer.—A living thing is distinguished from a dead thing by the multiplicity of the changes at any moment taking place in it.

Herbert Spencer.—Early ideas are not usually true ideas.

Sydney Smith.—I think it was Je Kyll who used to say that the further he went West, the more convinced he felt that the wise men came from the East.

Emerson.—Society....being in its nature a convention, it loves what is conventional or what belongs to coming together.

Junius.—One precedent creates another. They soon accumulate and become law.

Goldsmith.—To a philosopher no circumstance, however trifling, is too minute.

Coleridge.—The three ends which a statesman should propose to himself in Government of a nation, are—1. Security to possessors ; 2. Facility to acquirers ; and 3. Hope to all.

Washington.—Liberty when it begins to take root, is a plant of rapid growth.

Ruskin.—Imperfection in some sort essential to all that we know of life. It is the sign of life in a mortal body, that is, of a state of progress and change.

Indian Historical Record Commission.

By The Editor.

The Indian Historical Record Commission, which not long ago finished its Sixth Session at Madras, was a notable success. The Commission, as is well known, has been organized by the Government of India to standardize the work in regard to the preservation, collation and publication of all historical records in this country. The business of the Commission is done on the most approved lines—on the lines on which the English Historical Record Commission has worked for many years now. It is not proposed here to review the work of the Commission as a whole but only to say a few words to make its work better known, especially in regard to its primary work of making available in a permanent form all historical material bearing on Indian history. The Commission is doing excellent work towards this end. The periodical Sessions enable scattered workers in the Indian historical field to come together and exchange views as to methods and materials. The Commission, too, as a body gets a local knowledge of affairs in each area subject to its jurisdiction. Then, again, there is the further advantage—by no means a mean one—of local people possessing records of value bringing them out for purposes of exhibiting them in the Exhibition held in connection with the Sessions. This year's Exhibition was a particularly interesting one, and so far as Mysore is concerned, it was, I might say, an eye-opener to those who visited it. The work of the Commission is slowly extending and with it, its range of usefulness. In regard to Indian States, it is understood that the Commission would be glad to render any aid that may be required of it, provided there is a well pronounced demand for it. The Commission has got on it experienced and able men and their assistance in the matter of the handling, preservation and collation or publication of records would, I think, prove of the utmost value. It would be a great help to historical research if Indian States generally utilized the services of the Commission for these purposes. It would help towards unification of methods in regard to the treatment of historical records throughout the country. Such a step would help towards a more correct realization on the part of the Indian States and the British Provinces the value to each other of their historical records and finally, it seems to me, it would lead the way towards unification of procedure in regard to publication of all Indian historical records. A common purpose and aim would run through the whole country in regard to its records and this by itself would prove a valuable aid in unravelling correctly the tangled web of Indian history.

I have said above that this year's Exhibition of Historical Records proved an eminent success. This will be plain from a consideration of the Records relating in one way or other to Mysore exhibited at it. In the Madras Exhibits Section, under the head "From the Madras Record Office", were exhibited the following exceedingly interesting items :—

Under Records of Historical or Antiquarian Interest.

(Item No. 7).—Hindu Manners, Customs and Ceremonies, by Abbé Dubois. [Political Department, Sundry Books, Vols. 11 and 12.]

These two manuscript volumes in French were presented to the Madras Government by the author in 1820. As everybody knows, the well-known Abbé lived for the most part of his life in Mysore and was instrumental in popularizing vaccination in it. His Church near Seringapatam is still pointed out.

(Item No. 16).— Journal of Conferences with Tippu's Vakils, 1792. [Military Department, Sundry Books, Vol. 106.]

(Item No. 17).—Military Correspondence regarding the Fourth Mysore War, 1799. [Military Department, Sundry Books, Vol. 109.]

(Item No. 24).—Treaty Between Hyder Ali Khan and the English. Dated the 3rd April 1769. [Care Records, S. A. No. 4.]

(Item No. 25).—Treaty of Peace between the English East India Company and Tippu Sultan. Dated 11th March 1784. [Care Records, S. A. No. 8.]

Under Maps, Plans and Photographs.

I noted the following as specially interesting to Mysore :—

(Item No. 2).—The Barahmahal or Twelve Districts. No date. [M. R. O. Maps—Survey No. 283.] As every one knows, the Barahmahals comprise the country ceded by Tippu after his first war with the English at Madras.

(Item No. 7).—Boundary line between the Company's and Tippu's Territories, 1793. [M. R. O. Maps—Survey No. 200.]

(Item No. 8).—Dominions of Nizam Ali Khan, including the Subahs of Aurangabad, Berar, Muhammadabad, Beejapur, and Hyderabad, and the Mysore Frontier, after the partition treaty of 1799. [M. R. O. Maps—Survey No. Nil.]

Under Autographs of Famous Persons, etc.

I observed the following :—

(Item No.22).—From Major-General William Medows to Sir Charles Oakley, Bart., etc., Colonel of Fort St. George, dated Camp near Ma'lwahul, 16th April 1791.

Approving of the erection by the Company of a Memorial in the Church of Fort St. George to the merits of so distinguished a character as Colonel Moorhouse.

Medows arrived at Madras on the 19th February 1790 as Governor and Commander-in-Chief and left it on the 17th May and took command of army at Trichinopoly on the 24th. Lord Cornwallis arrived at Madras on the 12th December 1790 and directed Medows to join him. Lord Cornwallis entered Mysore on the 17th and 18th February by the Mugli Pass near Chittoor, before there was time to oppose him. Kolar was taken on the 28th, Hoskote on the 2nd March, and on the 5th the army arrived before Bangalore. The Pettah was carried by storm, the British loss amounting to 129 killed and wounded. Among those who fell (March 7) was Lieutenant-Colonel Moorhouse of the Madras Artillery, the officer above referred to, a very gallant and able officer, highly-respected throughout the army. He was lamented by the Madras Government as an officer whose long, active, and zealous services deserved the highest praise, and his remains were interred in St. Mary's Church, Fort St. George, at the public expense. Agreeably to the suggestion of Sir William Medows, the Court of Directors ordered the putting up of a monument in St. Mary's Church, Fort St. George, to perpetuate his memory. The monument was executed in England by C. Peart (see Cotton's "List of Tombs", 54). "Ma'lwahul", the village from which Major-General Medows dated his letter, is probably "Malenahalli", a village in Bangalore Hobli, Bangalore Taluk—which is close to the scene of action.

(Item No. 25).—From Major-General John Braithwaite, dated 2nd January 1801. A Map of Malabar, Wynaad, Mysore and Coorg

Under Persian Documents.

(Item No. 3).—Sannad from Muhammad Baydar Bukth, son of Muhammad Azam Shah, to Burman, the Zemindar of Chitaldrug, for erecting the Fort of Ramke Sriramandam—Dated 60th year of the reign.= 1696 A.D. [This is wrongly dated in the Exhibition Handbook as 1099 Hejiri, 1686.] [M. R. O. Carnatic Records.]

In the Section entitled "Casts of Coins," there were among others the "Coins of Mysore—Tippu Sultan," and the "Coins of Mysore—Wodiyar Dynasty."

In the Mackenzie Manuscripts Section, there was exhibited the "Keladi Nripa Vijaya Champu," containing the genealogy of a Kanarese line of kings who ruled at Keladi, between the 14th and 18th centuries.

Also in the "Local Records" Volume, relating to above (Mackenzie Manuscripts) Series, were shown the history of Seringapatam, the Memoirs of Hyder Ali, etc.

In the **Calcutta Exhibits** Part of the Exhibition, there were some exceedingly interesting items. Worthy of special remark are the exhibits of Rev. Father H. Hosten, S.J., relating to pre-Portuguese Christian relics in India, Ceylon, Burma and China. They ought to throw fresh light on the St. Thomas legend in India. A rather unique exhibit was one from Mr. A.K.M. Zackeriah, which was a *Quran* on a scroll of paper. It was really a unique copy of the Quran, designed for the use of Shiahs, written on a scroll of paper about 19½ ft. long and only 3 inches wide. The calligraphy was of the highest order ; though ornamental, it was simplicity itself. The *Durud*, invoking God's blessings on the twelve *Imams*, runs straight through the scroll, and within the outlines of the comparatively large letters of this *Durud* were found written in microscopic miniature the whole of the Quran, making it a marvellous piece of penmanship. The scroll was designed apparently for being used as a charm enclosed in silver or gold inside the head-dress of the wearer.

Of special interest to Mysore, were the following items exhibited in this Section, by the Imperial Record Department, Calcutta :—

(Item No. 13).—From Nana Farnavis, Minister of the Peshwa, asking the Governor-General to send military assistance to the Peshwa and the Nizam against Tippu Sultan. Bears the seal of the writer. [14th November 1785, No. 94.]

(Item No. 15).—From Tippu Sultan, saying that he has sent his Vakils to the Governor-General in order to negotiate a treaty of peace with the East India Company. Bears the seal of Tippu. [12th February 1792, No. 114.]

(Item No. 16).—From the Peshwa Baji Rao II, on the subject of a negotiation with Tippu Sultan. Bears the seal of the Peshwa. [20th September 1798, No. 361.]

(Item No. 17).—From Nizam Ali Khan, Nizam of Hyderabad, that he has made over to Captain Kirkpatrick copies of the correspondence which passed between him and Tippu Sultan. Bears the seal of the Nizam. [10th February 1799, No. 19.]

(Item No. 18).—From Maharaja Krishna Raja Wodiyar of Mysore, expressing his gratitude on being released and restored to the kingdom of his ancestors which had been usurped by the dynasty of Tippu Sultan. Bears the seal of the Maharaja.

Sahibzada Ahmed Hali-muzzaman (of the Mysore Family), Calcutta, had sent the following :—

(Item No. 29).—Two portraits of Tippu Sultan. These were excellent likenesses and attracted much attention.

Altogether the Commission's work and the Exhibition organized in connection with it proved a great success. Much public interest was aroused by the Commission's activities while in session, the Government of Madras making its stay in the metropolis not only easy but also pleasant. Their Excellencies Lord and Lady Willingdon personally spared no pains to render the work of the Commission a thorough success, the Session ending with a visit to Government-House, Madras, where were seen many historical portraits and relics of note. A word of commendation should be added here for the able and energetic manner in which the work of the Commission was put through by the Hon. H. E. A. Cotton, its Officiating-President, and Mr. Abdul Ali, its Secretary.

Trade and Public Companies in Bombay.

Seventy-one new companies were registered in Bombay during 1922-23 compared with 92 in the preceding year, 21 being public and 49 private companies. Of these 71 companies, five were concerned with clay stone and cement, 4 with motor traction, 2 with loan or investment trusts and one with banking. Only one insurance company was registered during the year, but there were four new printing, publishing and stationery companies. Engineering was responsible for 3 registrations, cotton mills for 2 and cotton ginning and pressing for one. Only one estate, land and building company was registered during the year compared with 5 the year before.

General trade depression, the fall of exchange and prices and the reaction caused by the failures which followed the boom of 1919-1920 are some of the factors mentioned in the Annual Report on the working of the Indian Companies Act as accounting for the decrease. The extensive market manipulations of certain large operators in Bombay and the crash that resulted from their efforts to effect "corners" still further freightened the investing public and great reluctance was displayed to invest in industrial securities, investors apparently preferring the good and certain yield obtainable from Government loans. Moreover, over 16 crores capital was paid up during the year to companies already in existence and this naturally restricted the amount of capital available for new concerns. The Registrar, referring to the slight increase in private companies, suggests that while some are undoubtedly due to the incidence of taxation, the attraction of limited liability when so many businesses have failed is also responsible. The nominal capital of the companies registered was nearly 8 crores.

A reflex of the conditions referred to above is shown by the fact that 68 companies were dissolved during the year as compared with 28 in the previous year and no fewer than 45 companies were struck off by the Registrar as defunct. Sixty-nine companies went into liquidation during the year, of which 54 were voluntary liquidations.

The total number of companies working at the close of the year was 888. The capital of companies that went into liquidation was 37½ crores authorized, 4½ crores subscribed and 1¾ crores paid-up. The result of the year's working shows a net increase of over 28½ crores in the authorized capital of the companies and a net increase of 14½ crores in the paid-up capital. The aggregate capital authorized, subscribed and paid-up of all the companies at the close of the year was 254 crores, 147½ crores and 97¾ crores, respectively.

Indian Economic Progress.

By Sir M. Visvesvaraya, K.C.I.E. *

When I received the request of your Executive Committee to take up the duties of President of this Conference a few days ago, I was travelling in the interior. For several reasons, the shortness of notice being one of them, I hesitated to comply at first, but, when later I gave my consent in response to a more pressing message, I did so with a mental reservation that I would not inflict a lengthy address on you.

I do not intend to dwell here on the present depressed condition of industry and trade in the country which, let us all hope, is a passing phase. I propose rather to discuss some of the more permanent factors, including certain glaring defects in economic equipment, which have retarded the progress of this country for some time past.

Many of you, particularly businessmen in Bombay, who have always taken an honourable share in the public affairs, will realize how difficult it is to discourse on Indian Economics in a practical spirit without coming up against controversial topics. In discharging this difficult task, however, I propose to take special care that, as far as possible, no words of mine shall have a jagged edge.

Indian Economics has been in a state of complaint ever since the subject came to be handled by men of courage, ability and independent thought. Questions germane to the subject have been discussed with great candour in the past in the writings of eminent men like Dadabhai Naoroji, Romesh Chunder Dutt, William Digby and others.

The All-India Industrial Conference, which until recently used to meet annually, also dwelt on topics of allied interest. The late Mr. Ranade wrote books, published magazines and carried on propaganda for several years. Under the auspices of that great Indian, annual industrial conferences were held in the nineties in the city of Poona. I lived in those days in Poona. In spite of its early awakening there has been no actual wealth-building in that city. While the intellectuals of Poona were investigating intricate economic problems, prominent commercial communities of Bombay, *viz.*, the Parsis, the Bohras, the Bhatias and the Banias with their keen business instincts were engaged in building up trade and wealth for themselves and for their city. Bombay owes the wealth and prosperity it enjoys to-day to the enterprise and example set by the leading men of these communities—the Tatas, the Petits, the Currimbhoys, the Mehtas, the Goculdases, the Thackerseys and many others, who have built up enduring reputations for themselves and left behind large business concerns for their successors.

We must not in this connection forget that the growth of Bombay as a great commercial centre, is primarily due to the stable conditions built up by British rule. The present economic framework of India is a British framework, originally meant for British commercial needs, at a time when population was sparse and food cheap and the advantages of factory industries and modern systems of commerce were not sufficiently known or understood in this country.

General Economic Situation.

One great disadvantage under which we labour here is the unsatisfactory state of its economic statistics. Such statistics as we have are incomplete and indefinite. For example, the money value of production from agriculture by villages or districts is not known to the Provincial Governments. The correct capital and production from industries and the Indian share in them and in the country's commerce is not known. If the approximate money values were available, as is the case in smaller countries like Canada and Australia, we should have a basis upon which to judge our position from year to year, compared with other Dominions and advanced countries. As matters stand, there is no means of appraising our real economic situation. Nobody, except perhaps the professors of the Sydenham College, go into these root facts.

Such statistics as we have, however, reveal a very unsatisfactory position. With your permission I will call attention to a few typical features. The wealth of India before the War was estimated at £3,600 millions or Rs. 5,400 crores. This meant an average property or wealth amounting to Rs. 180 per head of population. The corresponding

* Presidential Address delivered at the VII Indian Economic Conference, Bombay, 22nd January 1924.

figure for Canada was a little over Rs. 4,400; that for the United Kingdom Rs. 6,000. Again, the annual income per head in India at the present reduced value of money varies from between Rs. 45 and Rs. 60. Even assuming the maximum figure of Rs. 60, it would mean an average income of Rs. 5 per head per month. The corresponding yearly income given for Canada is Rs. 550 and for the United Kingdom Rs. 720. The trade for the whole of India comes to about Rs. 20 to Rs. 25 per head. For Canada and the United Kingdom, the figures are Rs. 510 and Rs. 640 respectively. On account of the general low level of occupations and low standard of living the death rate in India is very high, being over 30 per 1,000 while the same is less than 14 per 1,000 in the two countries named. The average expectation of life is about 24 years in India while it is about 45 in European countries. Education is extremely meagre, less than 6 per cent of the population being literate. Every other primary test that you may apply will show the same low standing, the same low level of efficiency.

Besides this, such property or wealth as there is, is unequally distributed. Industries are confined to three or four large cities like Bombay, Ahmedabad, Cawnpore, Calcutta and in a small way to a few other places like Madras. I have already referred to the unprogressive character of the city of Poona, unprogressive I mean as regards material wealth. An eminent Bengali economist told me a few weeks ago that over 80 per cent of the wealth of Calcutta was in non-Bengali hands. Vast numbers of population cling to occupations which outside competition has rendered unremunerative but there is no agency to advise and no one to go to their help.

Ignorance and Poverty.

The monthly income I have just stated is Rs. 5 per head. This is the average but the income of the poorest classes is of course much lower than this. The masses of the population are steeped in poverty bordering on destitution, poverty to which there is no parallel in Western countries. You will agree that a people with so low a record of literacy as 6 per cent and so poor an income as Rs. 5 per head per month cannot be said to be equipped for the struggle for existence and yet our late Governor, Sir George Lloyd, in a speech he made in November last, before a meeting of the Associated Chambers in Bombay, read the situation in a very different light. Said Sir George:—"The more closely the situation is examined, the more amazed does the student become, not at India's poverty but at her prosperity and wealth." He then went on comparing the increase in the cultivated area, in the production of wheat and rice, within the past 20 years. Sir George Lloyd was able to push, to the stage of sanction, the Sukkur Barrage project, which, it must be admitted, is a scheme of great economic importance to the country. We commend this measure; in other respects, his view is by no means the Indian view. As you know, this statement which I have quoted has been hotly disputed by Indian publicists all over the country. Sir George in making it has adopted a wrong basis for his comparisons. A progressive Government would take pride in the growth of production from industries, of volume, of commerce, of science, of arts and crafts and of technical education. Our late Governor, however, referred to none of these; he chose rather to point to the increase in certain "agricultural" products as evidences of India's prosperity. For example, he said that in 20 years the area under rice rose from 50 million acres to 80 millions and wheat from 25 to 30 million acres. If he had compared the figures for wheat with those of some of the Dominions, he would have found something startlingly instructive. For instance in Australia in the same period mentioned by him, the area under wheat rose from about 3.6 million acres to a little over 9 millions; in Canada, the increase was from under 4 million acres to nearly 23 millions. Agriculture, as we know, is the least remunerative of occupations and no country can maintain a civilized existence on agriculture alone. Then he compared India's present condition not with any average progressive country outside but with the past condition of India itself. That is the usual official way of demonstrating progress in this country. In a competitive world, it is not what we are to-day as compared with our past that matters, but how we stand with our competitors in other parts of the world. The fact that we were once doing very ill in some respects but are now better is no proof that we are doing anything appreciable in comparison with our neighbours.

It will be seen from the facts I have adduced that the general economic position of India

may be summed up in the two words, ignorance and poverty. What pains every thinking Indian who is anxious about his country's future is that there is no policy in the administration and no continuous effort on the part of our public men to combat these two evils. It is the obvious duty of Government to compile and maintain correct statistics to show the progress made by the people of the country in matters relating to their development. The absence of such statistics creates the suspicion that their maintenance is inconvenient because it leads to the obvious imputation which the figures convey. There should be, in fairness to Government, no scope for criticism of this nature. I am grieved to learn that, as a measure of retrenchment, even some of the meagre statistics which were being published till recently are being discontinued and the country is being plunged into deeper darkness.

In the educational activities of the country, it is an undeniable fact that technical and commercial education has come last and come late. The training available for industrial and commercial pursuits is extremely limited. The Sydenham College of Commerce and Economics was started only ten or twelve years ago. Even at this late date there does not exist, within the four corners of the Indian Empire, a single well-equipped College of Technology such as we find in Europe or America.

I hope you will not mind if I give one or two instances from my own personal experience.

Some sixteen years ago, I served on a Bombay Government Committee which went into the question of the improvement of the College of Engineering, Poona, and that Committee recommended, *inter alia*, what arrangement should be made for instruction in the highest branches of electrical engineering. The then Government approved of the recommendations made but the degree in electrical engineering, then proposed, is not established to this day. Some of you may be aware that a Technical and Industrial Education Committee was appointed by the Bombay Government in March 1921, of which I happened to be the Chairman. We laboured for a year under difficulties and produced a scheme. The unanimous report of the Indian members of that Committee was, as far as I know, approved by the entire press with the exception of one influential paper. But so far as the public is aware, Government have taken no action on our Report for over 20 months. The state of the finances may be a reason, but if the Government were in earnest, they might have approved of the scheme or at least one of the two schemes presented, and laid down a programme and asked the people to do what they could by their own unaided efforts, until funds could be found. But unfortunately there has been no inclination so far in that direction. In 1918 the Indian Industrial Commission, although debarred from considering questions of fiscal policy, made some recommendations calculated to give an impetus to industrial development. I could name a dozen instances in which the more important recommendations have remained a dead letter. No public official in this country deems it his duty to discuss these questions from the broad standpoint of policy or national interest. There is no visible move on the part of any one in authority to remedy many of the root defects I have enumerated.

A New Economic Structure.

We miss, in this country, the equipment and many of the measures usually found in the Dominions and progressive countries to protect or promote their economic interests. This is admitted. The semi-official review, *India in* 1922-23, states the bare truth when it says that "the country is not at present organized for the production of wealth." It is this organization and other concomitant measures, which are overdue, that we want our Government and public men to take in hand without further loss of time. The object of this new economic structure should be to provide the machinery and agencies needed to promote agriculture, industries, commerce, banking, communications, technical and general education and the multiplication of occupations generally.

You are aware that Boards of Industries have been established as a result of the recommendations of the Indian Industrial Commission. There is much room for improvement in the performances of these Boards. Sometime in 1922, I met the well-known Industrial expert Sir Alfred Chatterton in this city and as he and I had previously worked together on industrial questions in Mysore for about seven years we exchanged views about the new Boards of Industries, "How is business, Sir Alfred", I enquired. "Oh very bad, they are only manufacturing files," was his reply. He meant, of course, files of correspondence.

The Board of Industries in each Province ought to work under the control of the Minister-in-charge of the Development Departments and he ought to be advised by a Development Committee of the local Legislative Council. There is a large amount of opinion in favour of the present Boards being made a statutory body; the members instead of being nominated should be elected from among prominent businessmen and agriculturists. One section of the work of the Board should relate to industries with the Director of Industries as Secretary. A second section should concern itself with agriculture, commerce, technical education, co-operative societies and propaganda work generally to create an economic atmosphere, and this section should be in charge of a General Secretary. The Board should have its subordinate and expert staff in all the districts and work in collaboration with the local people's associations.

People's associations exist in many places already, chambers of commerce, manufacturers' associations, District and industrial associations, agricultural associations, etc. The creation of new agencies or new associations should be encouraged in localities and regions where none exist at present and the activities of the whole body of them should be co-ordinated if possible through a central body at the headquarters of the Presidency or Province. This central body may be an existing association or it may have to be newly created. The people's associations which may be actively engaged in practical development work or propaganda ought to be assisted with technical advice and other help by the officials and experts of the Board of Industries.

As in Japan, every city, town and village, or if the village is too small, a group of villages, should have a council or committee or panchayat to attend to increase of production under agriculture and industries and the spread of education, including vocational education and discipline. As in Japan, each city, town and village should maintain statistics of production and education through its own agencies and the Government Departments should be held responsible to compile figures for the district and the Province and at intervals to review and comment on the actual progress achieved not only in individual unit areas, cities, towns and villages—but also in regions and Provinces.

The Member or Minister of the Government of India in charge of the Development Departments should work in association with a Committee of the Central Legislature and should be able to enunciate policies and programmes which command popular support and review the progress achieved from year to year. The Provincial Minister should do similar work in the Province.

All-India Associations like the Indian Economic Association should be up-to-date business organizations with paid Secretaries and office equipment and should be in constant communication with the leading merchants and manufacturers, the Central and Provincial Governments and the Development Committees of the Central and Provincial Legislatures.

Lastly, to meet the difficulty so frequently urged for want of funds for developing industries and education at a time of financial strain like the present, it is suggested that for the next ten or fifteen years, the development projects be financed by loans. We have some unproductive debt already at present. We spent Rs. 150 crores or more on the great War. We might as well add to that debt a little more to fight ignorance and poverty. These loans will, of course, be Provincial. Such an expenditure, even though financed by loans for which interest and sinking fund charges would have to be met from the current revenues, if it helps to reduce illiteracy and poverty, will in the long run prove a valuable investment.

We require an economic survey for the Provinces to prepare estimates of their present assets. Starting with the results of this survey as a basis, progress should be watched in each of the developments by yearly and periodical stock-taking. Yearly, and in some cases monthly, returns should be published showing the attendance at educational institutions, growth of joint-stock undertakings, of production, of indigenous banking and shipping interests, etc., in each local area or region as well as in the Province as a whole.

There should be a constant and cordial co-operation between Government agencies and people's associations and representatives, and in the present state of development, Government aid is of the greatest value. But under a healthy organization we may confidently expect that the responsibility for stimulating and maintaining economic activities will be shouldered more and more by public bodies as time goes on.

Other Special Measures.

Such is the main structure I would recommend for economic regeneration. I do not say that the scheme as outlined by me is the best. But it includes the essential features usually borne in view in progressive countries. In saying this, I have two countries particularly in view, namely Japan and Canada, countries which I have twice visited, of whose economic framework I can claim some knowledge. Any other similar scheme will answer, provided there is no deviation from the principles indicated.

In addition to providing a new economic framework, there are a few special measures which the State should take in hand, simultaneously, to promote the material prosperity of the country. An impetus should be given to the manufacture of railway materials and rolling stock in India. This will come about automatically if Government places orders for railway materials and rolling stock within the country, through local merchants and contractors, subject to delivery according to specifications. I think for some time Indians should consent to purchase in England all such materials as cannot be had in India. Under present abnormal conditions, even British-owned factories in India fail to secure Government patronage. In Germany, before the War, not only were all railway materials purchased from firms within the country but each State insisted upon orders for plant and machinery for its railways being placed within the State itself. Similar measures of State patronage in each Province will go far to help to build up industries in India.

The manufacture of locomotives, machinery and motor cars will not take long to be established, if suitable subsidies and freight concessions on railways are granted. In the case of such new industries, dividends at reasonable rates for stated periods might be guaranteed or part of the capital needed for starting them provided by the State. Some money should be spent, or wasted, by the Government to make a start.

The manufactures for which there is a market within the country should receive earliest attention. At present, we are exporting Rs. 40 crores worth of raw cotton and Rs. 13 crores of cotton manufactures making a total of Rs. 53 crores per annum. We are importing cotton piece goods valued at Rs. 60 crores. But it is superfluous to remind a Bombay audience that there is room for 300 more cotton mills in the country and that with a little forethought and preparation, we ought to be able to manufacture for export cotton goods valued at about Rs. 75 crores more. The country might have an income of Rs. 68 crores from cotton and cotton manufactures instead of a loss of Rs. 7 crores as at present. Employment can be found for the poorer classes in Bengal by utilizing some of the raw jute which is now exported. It does not seem right that, while unemployment is rife in this land, the Indian should be allowed to remain idle and expect richer nations to spin and weave for him!

As regards protection, a high tariff policy may not be good for a country like England, which depends for its support on manufactures and services, but as the experience of all the Dominions has shown, it is the only sound policy for India. The detailed enquiries into the steel trade, the meticulous care with which the Tariff Board are weighing pros and cons are a superfluity. From the close enquiries I have made in foreign countries, especially Canada, the case for protection for the steel industry in India is fully established on general grounds. Under similar conditions no Dominion—no civilized country in these days—would hesitate one moment to protect this basic industry.

The country has demanded shipping and banking facilities for a long time past and perhaps it is time that strong committees of the central legislature were formed to vigorously promote these much needed facilities.

The present system of sterling exchange and the practice of maintaining a token coin for internal circulation should be speedily replaced by a standard gold currency. Every impartial expert I have consulted is of this opinion.

The extension of technical and commercial education should be pushed forward by the elected Boards of Industries already referred to. One good College of Technology and one Commercial College will be needed in every province and liberal scholarships should be provided for each province for training our young men in England, America and Germany.

There is one more point on which I wish to lay some emphasis at this stage. Whenever Government appoint Commissions or Committees in future to investigate any

reform or forward move such as industrial development or technical education, or forest exploitation, they would do well to depute those bodies to the Dominions and the progressive countries which have specialized in such subjects. The Commissions or Committees would learn far more in a month in those countries than they would in India in a year if they toured gathering opinions of persons who have had no practical acquaintance with any better state of things.

These are some of the more important measures which the country wants and which the Government of India would undoubtedly have adopted long ago had that Government been amenable to Indian public opinion, had India been free to mould her economic destiny.

Conclusion.

I have had to dwell on topics, some of which may seem controversial. But how could I avoid them? My theme has been ignorance and poverty and measures of amelioration. I have an idea that no more appropriate subject could have been chosen for discussion at the present time before an All-India assembly of businessmen and economic experts such as this Conference is.

There is a steady attempt in progressive countries like U. S. A. and Canada to raise the standard of living by a liberal extension of education and by multiplying the use of machinery and by restricting immigration. Leading American economists have begun to declare with pardonable pride that their country is already within striking distance of abolishing poverty. From the facts I have placed before you, such a hope for India looks like a distant, very distant dream. The country is not organized for the production of wealth, says the latest semi-official report; then what is it organized for? We know the population is growing but we are not aware of any deep-laid plans or thought-out purpose in the Government either to provide for or to combat this increase. If there is a policy or programme for economic uplift in the counsels of Government, let us know what it is. If it is a sound one, why every patriotic citizen, every association in the country would work for it. But if there is no policy, no programme and if it is just a case of drift, the situation seems grave. We owe it to our country and posterity not to rest content until suitable remedial measures are adopted.

It is true large irrigation schemes have been developed under British rule and railways extended from one end of the country to the other, but that is no reason why, if bigger economic schemes are possible, they should not be attempted. There are vast tracts of country still undeveloped and vast forests and mining resources remain untouched. The industrial possibilities alone are immense. America shows how extensive railway systems could be made if every ounce of iron and steel required were manufactured in the country itself. Millions and millions of money have gone out of the country to purchase iron and steel products and machinery in the past. We have got the raw material, we have got the men. We are already making pig iron cheaper than it can be manufactured in any other part of the world. If timely measures are adopted, steel manufacture and machinery can be made equally cheap within the country. People are hungry for employment. We know that in many parts of rural India the cultivators obtain remunerative employment only for 6 or 8 months in the year and that quite 80 per cent of them live in mud huts sheltered by thatched roofs. We know what unemployment means and we cannot but deeply feel for the great numbers of the unemployed in England. But for every million of unemployed in the United Kingdom, there must be at least 30 millions in India, but we keep no unemployment rolls, we make no returns.

If the necessary organizations, both semi-official and public, are brought into existence in the manner explained already, if policies and programmes are laid down duly endorsed by legislative enactments, if a correct inventory of the present-day position is taken and if the progress in production from agriculture and industries, banking power, growth of joint-stock companies and other similar matters is watched from year to year, if we know what assets we have and what debts we owe and have the satisfaction that from year to year our assets are growing or our debt is diminishing, or if there is no improvement we keep ourselves informed of the reason why, then the country can be sure that good use is being made of its opportunities, or if good use is not being made, that it must be due to causes which are unavoidable or beyond human control.

The inference must be plain to you all now that a change in the present economic structure, which is old and out-of-date, is overdue and that in future a permanent union between Great Britain and India should be

promoted and maintained on the basis of mutual benefit and healthy common interests. But the change will not come about unless fiscal autonomy is first conceded. There is an awakening in the people who now know that they will not be able to get on without education and industries and are willing to make sacrifices. We have huge resources and an enormous population which has not been adequately mobilized. If the measures suggested here, or other equally effective ones, be adopted, there is every prospect that we may be able to double production from agriculture, and quadruple that from industries, in less than fifteen years. With the creation of reasonable facilities, there is every hope that the material progress of the country will proceed at a pace which will astonish the world.

Concluding Speech.

In his concluding speech, Sir M. Visvesvaraya made the following observations :—

One of the first things that occurred to me when the proceedings began was that we should, if possible, pass resolutions to clarify the views of the majority on some of the more important subjects discussed by the Conference, and thus give a lead to the country on questions of economic policy and interest. I understood, however, that as many of the members were professors, many of them serving under Government, resolutions passed by them might place Government in a false and sometimes in embarrassing position. It was also thought that Government might not approve of such action on the part of their officials. A large number of subjects were discussed and many views put forward but there was no record or result. It was next suggested that non-official members only might vote on the resolutions but as the number of such non-officials was small, that idea too had to be abandoned.

On the subject of preference within the Empire, I understood that the considered opinion of the Conference was that preference was not feasible until fiscal autonomy was first conceded to this country. Once India obtained this concession, there was no reason why British capital should not continue to flow into India or why British industries should not thrive in this country as they do in Canada.

The question of customs and other all-India duties levied by the Government of India was discussed in relation to their effect on Indian States. There are many difficulties in the way of ascertaining what exact percentage is due to each State but, because there is a difficulty in distribution, it is not right that the entire revenues should continue to be pocketed by the Government of India. The population of the Indian States forms about one-fifth of the total population of India and a proportion of the revenues of the Government of India from custom, salts, excise, etc., say to the extent of one-fifth or one-sixth of the total ought to be set apart for distribution among the Indian States roughly in proportion to their population.

The more correct thing to do to safeguard the interests of Indian States is to arrange for some sort of representation for them in the central legislature itself. That would mean taxation with representation and it would help to promote unity among Indian States and prevent misunderstanding between the Indian States and the British Provinces. Such a representation is feasible for the purpose of deciding questions of an all-India character. I advocated this in a paper which was submitted when the Montagu-Chelmsford reforms were under consideration.

On the subject of currency policy and gold exchange standard, there were three valuable papers, some eloquent speeches and acute differences of opinion. Under the circumstances, I suppose you will expect me to be discreet and say nothing. But I find, in my opening address, I have already committed myself to the gold standard and a gold exchange currency. If I may mention, without seeming presumptuous, I should like to add that I have come to this conclusion after discussing the question with eminent financiers, both English and foreign, financiers for instance, like the Governor of the Bank of Japan and the Principal Expert of the Federal Reserve Board at Washington. In this view, I am glad to find that I have the support of the Professors of the Sydenham College. One of the most urgent wants of the country at the present time is a large increase in the number of indigenous banks and branches distributed all over the country, also a system of agricultural and industrial banks, all interlinked under sufficient safeguards with the Imperial Bank of India. I know Mr. Findlay Shirras has drawn attention to the existing low banking power of the country.

The co-operative credit system, although it originated under Government auspices, is a

movement in which the people are expected to help themselves. If anything goes wrong, it is the people and not the Government that are to blame. As in Japan, popular leaders should go to more progressive countries where the system is operating, observe how the problems which arise from time to time are dealt with by them, come back and carry on a propaganda to enlighten our own people here. Such leaders should receive financial assistance from public associations.

The question of housing the working classes in Bombay was dealt with in an interesting paper. The best solution of the housing problem in Bombay would be to encourage house-building in the northern suburb of Salsette. There is abundant land there and communications can be easily improved by electric railways. If proper town-planning is undertaken and building areas are marked out and building plots kept ready for prospective builders in half a dozen places in the island at a time, the land values for the plots will go down. The middle and the working classes will be enabled to build small cottages for themselves as in European countries. In Manchester, for instance, labourers are able to build houses for themselves at a cost of about £250 each. There is no reason why for Rs. 5,000 or upwards it should not be possible to build small cottages in Salsette. What is needed are a comprehensive plan and policy. I may mention that, while I was an official here some fifteen years ago, I took some interest in this question and suggested the development of Salsette to relieve the congestion of Bombay in a paper I submitted to the then Governor, Sir George Clarke, afterwards Lord Sydenham. Lord Sydenham referred to this proposal of mine with approval in a public speech he made at Abdheri in 1911. A solution on those lines will best meet the housing problem in Bombay. I have no wish to seem to criticise any alternative arrangements that may be in force at the present time.

The question of the growth of population was discussed ably in a paper by Prof. Hamilton. It does seem that India is getting overpopulated, if regard be had to the food-supply and productive power of the country. This difficulty can be combated in two ways namely, by increasing production, multiplying occupations and spreading education and by reducing the number of births by means of late marriages and in other ways known to European countries. I met a Science Professor and his wife last year—whether in Bombay or Calcutta, what does it matter?—who, in the course of conversation, told me that they had only two children because they could not afford to maintain a larger number without lowering their standard of comfort. This view is held by many middle class families I have met with in England and America.

On the question of agricultural and industrial development, we had some important discussions and eloquent speeches over Prof. Joshi's paper. My conclusion, after a prolonged study of the question, is that it is possible in India to increase production both from industries and agriculture and from industries very much more than from agriculture till the income from industries and trade is about 50 per cent of the whole.

The subject of "real balance of trade" has been discussed in a very informing manner by Mr. Findlay Shirras. He deserves our best thanks for bringing up this most important subject and throwing it open for discussion. In my opinion, this question should be discussed every year since it is necessary to keep ourselves informed as correctly as we can whether we are a debtor or a creditor nation and in either case to what extent.

It seems such a pity that no paper on Indian or Provincial Finance was brought up for discussion at this Session.

Before I close, I wish once more to refer to the twin evils of ignorance and poverty with which this counrty is afflicted and to invite attention to the absence of any responsible agency, official or public, to attend the measures of amelioration which the situation demands. There ought to be a people's association or committee and also Government officials or agency to attend to economic progress, *i.e.*, education and production in each local area, in every city, town or village. Both in Central Government and in the Provinces, there should be a development or nation-building department under which the local officials mentioned would be serving. Till Government provides adequate agencies, the people ought to undertake this responsibility themselves. Much might be done in this respect by co-operative effort, by encouraging a spirit of fellow service and citizen service.

With reference to the future of the Indian Economic Association, my personal view is that the affairs of the Association should be placed on a more permanent and satisfactory basis by selecting a central city like Bonmbay for its head-quarters and collecting sufficient

funds to maintain a paid secretary and staff. Every Provincial head-quarter city should have one Provincial Association. This will enable economic propaganda and activities being maintained all through the year and all over the country, by means of committees, journals and pamphlets, and thus a continuous interest keep up in the work and objects of this Association.

This is a semi-official organization. The work to be done is both academic and practical. I found professors over-cautious in discussion and unwilling to express their views fully and frankly. It would be a good thing Government could be induced to give them more freedom of speech and action following the example of Western Universities. It is the professors that should prepare the schemes and business men that should execute them. Economic thought should be in advance of economic development. The professors are expected to think ahead and to educate the public by propaganda through the public press and in other ways and thus create a congenial economic atmosphere. It is the duty and privilege of professors in all countries to do the thinking for the nation. In countries like Germany and Japan, professors vie with one another in publishing for the benefit of the local public new ideas derived from foreign sources. Similarly, our professors too have it in their power to raise the level of economic thought in this country.

[*Note.*—We hope to publish in our next issue some notable Press Comments on Sir M. Visvesvaraya's Speeches.—Ed., *M.E.J.*]

Women in Council.

Mrs. Wintringham, M.P., presided at the concluding meeting of the Conference of Delegates to the National Council of Women held recently at Edinburgh. She paid a tribute to the work of the Council and said that she wished that there were many of their number in Parliament. She and Lady Astor felt that they were holding the fort for them. That was the last meeting of a very successful series. Thank goodness the day for pious resolutions was now over. Women had the vote and were going to make those pious resolutions into something very real.

There were three sorts of members in the House of Commons. They were those who really and truly were keen on questions affecting women and children; those who supported the cause they had at heart because they knew women had the vote and they dare not to do otherwise; and the reactionaries, who held that women had nothing to do with political life. It was from the second class that they would get the greatest help and it was to them that the Women's Council could play their magic flute.

The legislation affecting children passed during the last ten years had to be altered. Conditions were now so difficult. Children were not nearly so subject to discipline. Very often they had lost one parent; very often the mothers had become the breadwinners. One consequence was that the child really required a deal more discipline. Hence the need for a review of legislation.

Professor Campagnac (Liverpool University) read a paper on "Education and Life". He said that they had no reason to be on tent with what had been achieved in education. He would not say that that was a reason for discouragement, but there was reason for disappointment. We were too quick to persuade ourselves that education was a process of getting and was to be measured by accomplishments and acquisitions and the possession of powers and emoluments. Education must be conceived otherwise, not as getting but as a giving up.

A paper on "Hand Eye Training" was contributed by Miss Chart (Edinburgh College of Art). She said that the vision of young children was particularly active, and they found great delight in doing things. It should be the object of all teaching to stimulate this vision by training the eye and the hand.

Lady Dunedin spoke of the teaching of thrift to children, and advocated to co-operative saving by means of children's efforts and saving certificates.

Lady Salvesen, President of the Edinburgh branch, spoke on the "discipline of amenities," which she regarded as the basis of civilization. She classed children who threw torn paper about the streets with smokers who carelessly threw lighted matches about. Both disregarded the comfort of others. Children should be taught that the exercise of constant discipline lay at the bottom of good character and good citizenship.

Co-operation in Mysore.

By Mr. Mir Hamza Hussain, B.A., B.L.,

First Member of Council, Mysore State.*

The movement in India is not essentially of popular growth in the sense that it is not due to any demand or desire on the part of the people for a new order of society. The teachings which led to the establishment of the co-operative movement in the West led also to the spread of socialism. In fact the creed of Robert Owen was mixed up with socialism. In some continental countries co-operation is allied to socialism. In India we need entertain no such fear. There is no such class here as that of capitalists and no divergence therefore between capital and labour. Thanks to the caste system, it prevents the cleavage of society into what is called in the West the capitalists and labourites. Any caste, however numerous, will contain within its fold both these classes of persons who will necessarily come into social contact with one another. So far as the Mahommedans are concerned, the doctrine of social equality is so much ingrained in them on account of their religious teachings that there is no possibility of an exclusive class of landed proprietors or capitalists springing up.

The co-operative movement in India owes its origin, as you know, to the Co-operative Credit Societies Act, 1904, which was inspired first by the report of Sir Frederick Nicholson and subsequently by the Committee that was appointed by Lord Curzon under the presidency of Sir Edward Law. The Act of 1904 has since been replaced by Act of 1915 which authorizes the establishment of non-credit societies and of Central and Provincial Banks. Though the movement in the present form is an exotic which was planted on the soil of India, it has taken firm root and has spread itself to all parts of India. There were at the end of the year 1921-22, 47,879 co-operative societies including Central Banks and Unions, with a membership of 2,983,534 and a working capital of Rs. 28,98,32,000 and they advanced loans to the extent of Rs. 16,11,49,710. This remarkable growth in the space of about 18 years is due partly to the exertions of the Co-operative Department which was created under the Act in almost all provinces of British India and chiefly to the fact that co-operation both as an idea and as a system of business was not unknown to India. "There was an indigenous system of banking available to persons of small means called the Nidhi which corresponds in some respects to Provident Funds and Friendly Societies of European countries. There is besides the co-operative partnership system which is practised even to this day by the Marwadis and Labbe merchants under which an employee after some years of successful working becomes a partner of the business with his employers. But the most important of all Indian co-operative institutions is the joint family system under which labour, capital and skill combine to manage a family business working under the accepted co-operative formula 'each for all and all for each'. Professor Marshall in his great work on Economics says: "The accumulation of capital is governed by a variety of causes, by custom, by habits of self-control and forecasting and realizing the future and above all by the power of family affection." It is this power of family affection which has given the Hindu society the power to resist the hordes of foreign invasions and keep the village community intact. Wherever the joint family system is in vogue, the family, whether it be of an agriculturist or of a merchant or trader, flourishes and its prosperity declines the moment the family becomes divided. But the present tendency of the Hindu society is plainly individualistic. As soon as a member of a joint Hindu family begins to earn, he separates himself and sets up an independent establishment of his own and this tendency has been greatly encouraged by our Civil Courts who go so far as to treat an unambiguous and unequivocal intention to separate, as equivalent to an actual partition. However, a co-operative society seems to be the only remedy against the evils of this individualistic system.

Co-operation in Mysore.

Our State was the first in the field of co-operation in India. Whilst other provinces were still cogitating, the late Sir Seshadri Iyer conceived the idea of Agricultural Banks and started them in the year 1904. I shall deal with this subject later on, but I may state here that with the passing of the Act of 1904,

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* Presidential Address delivered at the Mysore Co-operative Conference.

we gave up our special institution and fell into line with British India. We passed a legislation, the Co-operative Societies Regulation of 1905, which, though somewhat different from the Indian Act of 1904, is mainly based on that model, and since the passing of the amended Regulation of 1918, our system is in complete accord with that obtaining in British India.

The progress that we have made in the field of co-operation cannot but be regarded as satisfactory. This is also the opinion of the Committee that sat under the presidency of the Hon'ble Lalubhai Samaldas to examine the spread and working of the co-operative system in Mysore. There are in all now 1,539 societies with a total number of membership of 1,01,091 and a working capital of Rs. 86,95,108. The progress of the movement was slow and cautious during the first five years of its existence, there being 111 societies at the end of the year 1910-11. During the subsequent quinquennium, the number rose to 800 and since then its progress has been steady. Having regard to the population and its area, our State, though not the first or the second, occupies a leading place among the provinces in British India as is shown by the percentages noted below :—

Punjab	45.0
Central Provinces	35.7
Bombay	17.7
Madras	17.5
Bengal	14.4
Mysore	25.3

AGRICULTURAL CREDIT SOCIETIES.

Our societies may be divided into credit societies and non-credit societies and the former into agricultural and non-agricultural. Our societies as in British India are mostly of the agricultural credit type, there being as many as 1170 belonging to that class. Though the societies afford cheap capital to the agriculturist, they are wanting in the true spirit of co-operation since they are based on the share system and the shareholders, as you all know, are generally anxious to have a good dividend on the shares. Provision has been made to restrict this tendency, by providing that profits beyond a certain limit ought not to be distributed without the permission of the Registrar, but instances are not wanting where dividends have been distributed without any such permission. It is hoped that the Registrar will not hesitate to cancel the registration of such recalcitrant societies.

There is a great scope for the expansion of the system. There are 16,000 villages in the State. It is too much to expect that every village should have a society of its own, but giving one co-operative society for 3 villages, we must at least have 5,000 societies in the State of the kind under consideration. There is no doubt, that the paucity of workers in villages hampers the work of development but with the expansion of primary and middle school education, there should be no difficulty in reaching this goal in the course of a few years. There is a great need for the societies of cotton growers, paddy growers, ragi growers, potato growers, etc., who can purchase the produce from the ryots and sell it to the best advantage allowing the seller to share in the profits. There are a few societies of this kind, but their number is insignificant. Formation of such societies will greatly increase the prosperity and well-being of the ryot.

I have not been able to find from published reports how many of our societies are in a moribund condition and how many of them have been allowed by the Department to remain in a state of suspended animation. My impression is that there are a good many societies which are not in working condition. The Registrar, I hope, will take steps to wind them up after giving them a chance to revive ; for it is far better to have a small number of societies in an efficient condition than a large number of them in an indifferent condition.

NON-AGRICULTURAL CREDIT SOCIETIES.

It has been found difficult to draw a line between an agricultural credit society and a non-agricultural credit society, because the membership of these societies is a mixed one consisting of both the agriculturists and non-agriculturists. Taking such societies as have for their members a majority of non-agriculturists, the Mysore Committee on Co-operation compute the number of such societies at 263 with a membership of 4,296 and a share capital of Rs. 18,44,000. With regard to these societies, the Committee observe :—

"We may say generally of these societies that they form a strong and satisfactory side of the co-operative movement in the State. The members are, as a rule, literate and there is no difficulty in securing a proper managing committee. The funds raised by them being mostly local, considerable watch is kept by the members generally on the acts of the managing committee and any serious irregularity or neglect on their part is immediately noted and

steps taken to set matters right. These societies are exceptionally strong on the financial side. Scarcely any of them ever stand in need of financial assistance from the central institutions. They have secured public confidence and they are able to raise all the money they want by local deposits."

It is these societies that can solve many an economic and industrial problem of the State, as they are backed up by the intelligentia of the country. Having adequate capital at their command and an enlightened management alive to the needs of the times, these societies can very well follow the example of the wholesale societies of England and add a productive branch to their activities. These societies can, in addition to their ordinary business of credit, start a small industrial workshop, say, for the hulling of rice, for the manufacture of jaggery, ghee and oils, etc. It has been proposed that the reserve fund of these societies may be added on to the working capital and utilized in lending it to borrowers. But a better course would be to divert it for the purposes stated above. It is the productive side of our co-operation that requires development and we want more societies for the conversion of our produce into finished products.

Non-Credit Societies.

There are very few societies formed for the purpose of supplying purely the agricultural needs of the ryots. Out of 146 societies, there are only 72 societies which are formed to supply manure, seeds to the ryots, but the amount of work they do is almost insignificant. We have adopted of late a combined system of credit and supply under which the ordinary credit society purchases manure, seeds, etc., and supplies them to the ryots. The Agricultural and Co-operative Departments are working hand in hand and as a result of their combined efforts we have already started 46 societies of these type and in course of time, we are sure that other agricultural co-operative societies will follow suit and enlarge the sphere of usefulness. Under this head also come the societies like the weavers' societies of craftsmen and artisans. There are in all 69 societies of this description of which 43 are weavers' societies. Of the latter the Bangalore Weavers' Society is the most important. It has a membership of 236, with a share capital of Rs. 12,742. The society did business to the extent of Rs. 1,39,571 during the year 1921-22 and was able to declare a dividend of 10 per cent. But the drawback in the constitution of the society is that it permits the sale of goods manufactured with the materials supplied by it to outsiders and this may land it in difficulties. The Mysore Co-operative Committee recommended the establishment of a central sale society to which all the primary weavers' societies should be affiliated. The suggestion is commendable and may be adopted. In fact the present weavers' society can be easily converted into an organization of this kind.

The Census Report shows that there are 34 castes in the Mysore State most of which are those of artisans and craftsmen and other manual labourers who live mostly in towns and big villages. There is plenty of scope for the formation of societies amongst them. For example, there should be a milkmen or gollars' society in almost every town for the supply of milk, a fuel society for the supply of fuel, a blacksmiths' society, a jewellers' society and so on. There is abundant material for this purpose and a rich harvest will be reaped if a little co-operative spirit is infused into the men.

Sericultural Societies.

Next to agriculture, sericulture is the most important industry in the State, but it is a matter for regret that there are only 6 co-operative societies for the supply of disease-free eggs and implements for rearing cocoons, etc., working in the State. There is no object gained in having an exclusive society for the purpose. Just as in the case of agriculture a combined credit and supply society has been found to be useful, sericultural societies of the kind will be more popular and will relieve the ryot of the necessity of going to the sowcar to raise money for his ordinary needs.

Grain Banks.

The necessity of grain banks to enable the ryot to tide over a season of distress is apparent, but there is no agreement as to the type of the society to be started. Mr. Zahiruddin Mecci, who takes a keen interest in the formation of such banks, has elaborated a scheme under which each village is expected to form a bank of its own, each family in the village contributing a certain quantity of grain in the harvest season which will be loaned to the ryots in the time of need. The Mysore Co-operative Committee has examined this scheme as also the scheme of our late Registrar, Mr. Shama Rao, and has recommended that the grain banks should be placed on a co-operative basis. This is the only possible alternative, but unless there is some provision made for the disposal of the surplus stored grain after

the necessary reserve is formed, the society will be a charitable institution only and will not be able to attract grain deposits from well-to-do members who may not feel the necessity in time of distress to borrow grain from the bank. The matter may be discussed in this Conference and measures may be devised to place the scheme on a practical footing.

Talking of grain banks, I may refer to the necessity of consolidation of scattered holdings and it seems to me that having regard to the habits of ryots, co-operative farming will not be a success as it has been in Denmark. But I would like to see a co-operative farm being worked up. Government have been releasing a large extent of Amrut Mahal lands for cultivation. An estate can easily be carved out and worked on co-operative principles. It is for the intelligentia of the country to take up the scheme and work it to success.

Co-operative Stores.

There are 80 stores in the State and many of them are run by credit societies. They are engaged in the supply of household provisions and cloths. They are to be found mostly in the towns and are patronized mostly by the officials class who find in a store a useful credit house for the purchase of their daily necessities of life. The constitution of these societies is based on the Rochdale system, with this difference that the sales are not made invariably on a cash basis and price charged is not the market price. The Mysore Co-operative Committee who examined the question in great detail are in favour of allowing the present practice to continue. I would, however, like to draw the attention of this Conference to the Co-operative formula "credit for consumption is the road to poverty—credit for production is the road to well-being."

House-Building Societies.

In England, house-building societies are generally brought under the co-operative movement. There is a separate Act called the House Building Societies Act, 1894, under which house-building societies are registered. There is, however, a movement of very recent growth called the Tenants' Co-partnership System under which a society buys a piece of land, constructs a number of houses and lets them out to its members. There are very few societies of this description in England, but they have sprung up very rapidly and promise great extension and usefulness in future. We have 7 building societies of which only 4 are active. These societies, with the exception of the Non-gazetted Officers' Association Co-operative Society, are credit societies formed for advancing money for constructing houses for the supply of materials for the same purpose, and in one case only for buying of houses also. The Non-gazetted Officers' Association Co-operative Society is the only association that has acquired a piece of land, laid it out and constructed houses. The Mysore Co-operative Committee are strongly in favour of the Tenants' Co-partnership System, but advocate at the same time financial aid to the societies from State funds. Government have already sanctioned an advance of a sum of Rs. 10,000 for the Non-gazetted Officers' Association Co-operative Society and the general question of making a fixed allotment every year will, of course, be examined. But these societies, though they have been serving a useful purpose in enabling the members to secure houses of their own, cannot go far to relief congestion in towns and cities or to solve the problem of housing the poor. These are matters that come within the purview of State or municipal socialism and need not be discussed here.

Central Banks and Unions.

In the financing of primary societies the central banks play an important part. In some provinces in British India there is an intermediate body called the Union, a federation of co-operative societies which undertake the duties of supervision of the primary societies, the investigation of their applications for loans, combined in some instances with a guarantee for the loans advanced to societies. Of the Unions which were started in Mysore, some did not start work, while others which started work did not prosper and three of them have, under the orders of Government, been converted into District Banks. Our State being a small one and there being a Government department for the investigation of loans, the necessity for the existence of an intermediary is not apparent and the Mysore Co-operative Committee have rightly recommended, I think, the cancellation of the few existing Unions.

The financing of the primary societies is done now chiefly by the central banks. The Central Co-operative Bank and the Provincial Co-operative Bank are doing good work and are in a prosperous condition, the Central Bank having declared very recently a dividend of 10½ per cent. The Provincial Bank passed through a period of great stress very recently, but I am glad to state that with the assistance of the department it has tided over the crisis.

There is some difference in the constitution of the two banks. The management in the Provincial Bank is largely in the hands of affiliated societies, whereas, in the Central Co-operative Bank it is in the hands of individual members. There is also the difference that the Provincial Bank lends money to primary societies only, but the Central Bank lends money both to primary societies and to individuals. It is ithe latter aspect of the Central Bank's activites that has come in for adverse comment at the hands of the Mysore Co-operative Committee, as in actual working the bank has been advancing a large proportion of its loans to individuals. The Committee recommended the amalgamation of the two banks with a constitution similar to that of the Provincial Bank or in the alternative, alteration of the constitution of the Central Bank. The recommendation of the Committee will, I hope, receive full and adequate attention at the hands of the Central Bank.

Agricultural Banks and Land Mortgage Banks.

I have stated that Mysore was the first in the field of co-operation in India as it started agricultural banks in the year 1894. The constitution of these banks was on the approved Raffisen type, but they were all financed by the State. There were in all 61 banks started and a sum of Rs. 17,30,341 was advanced to them by the State. The coffee banks of Chickmagalur and Saklespur appropriated between them Rs. 9,75,915 and a sum of Rs. 4,59,211 has in all been recovered from them. The rest of the 59 banks received a sum of Rs. 7,53,426 and a sum of Rs. 7,31,418 has been recovered from them. It will thus be seen that the loss caused to the Government from these latter banks is insignificant. It is the failure of the coffee banks that has brought the whole system into disrepute. Had the department not been discouraged by the failure of the coffee banks and worked up the remaining banks, the small sum of Rs. 22,000 which the Government have lost upon the latter would have been easily recovered and the great majority of them would have been doing useful work as the two surviving banks of Palhalli, Seringapatam Taluk and Hongenahalli, Malur Taluk, have been doing in spite of adverse circumstances. Various reasons have been assigned for the failure of the agricultural banks. The Committee think that the failure was due to inefficient management, lack of proper supervision and above all to the cheap capital that was available to them for borrowing. But I have already shown that there was no failure as regards non-coffee banks and in respect of the coffee banks the failure was due, I think, to the fact that the Government advanced money directly to these banks, the accepted principle being that the Government, if it furnishes any financial aid at all, should do so through an intermediate body who will supervise properly the application of the money and stand guarantee to it for its security. The department, I think, should try to revive the system and start new banks on that model with money borrowed from the Central Banks. There is absolutely no reason why a system which has succeeded so well in the barren tracts of Germany and has been successfully adopted by other countries should be a failure in our State.

The Government have been giving from time immemorial financial aid to the ryot in the shape of takkavi loans and now the system has received statutory recognition under Regulation No. IV of 1891 which is based upon the British Indian Act of 1884. It is now acknowledged that the measure is a failure inasmuch as it has failed to achieve the object in view, *viz.*, relief of the indebtedness of the ryot and so a demand is being made for the establishment of separate land mortgage banks. Opinion is divided as to whether such banks should be on a co-operative basis or not. It has been frequently urged that an agricultural bank of the Egyptian type should be started. But the Egyptian bank is not considered to be an unqualified success. This is what a professor of Economics in Egypt says about this bank :—

"The idea suggesting the foundation of the agricultural bank was of the happiest . . . . . The peasantry have largely drawn upon its resources—now grown to twelve crores of rupees; at the present time they stand at fifteen crores. To what uses has this enormous capital been put by them? Only too often to one that was quite unproductive: to pay the expense of some merry making, to buy some young fellow off his military service. Even where the loan has not been squandered in this fashion, it has often enough been wasted upon the purchase of land that did not pay the interest and sinking fund of the loan. During the last two years the bank has been able to recover its loans only partially and with great difficulty."

The Government of India had the system examined and they are of opinion that it is unsuited to India. Henry Wolff, the famous

writer on Co-operation, says that "the tale of the Agricultural Bank of Egypt is manifestly, as an example for India, a tale of failure." He, of course, advocates a bank based upon co-operative credit system. An Indian writer on Economics observes as follows :—

"The importance of co-operative credit societies cannot be gainsaid. They supply a badly felt want of the cultivator by providing him with credit where he has none. Agricultural operations are facilitated and higher profits are ensured. Credit societies very largely perform the same function as agricultural banks, and they are eminently useful to cultivators who have only small pieces of land to mortgage. They enable them to capitalize their honesty and, on the principle of self-help and mutual aid, to improve their condition. This is an aspect of the agrarian and the general economic question which should not be lost sight of."

The Mysore Co-operative Committee have after full consideration recommended the formation of two State-aided Banks, one for arecanut growers and the other for coffee planters. There can be no objection to the Government granting financial aid to the proposed banks provided property security is forthcoming, but in the Malnad even the best property has no market value. Our experience of agricultural banks has shown that when the property is brought to sale, it fails to fetch an adequate price owing to the paucity of bidders. It will have to be purchased in the long run by the Government or allowed to remain in the possession of the defaulter himself with liberty to him to enjoy the produce without any liability for the payment of his debt.

Cottage Industries.

There is another branch of the co-operative movement to which it is necessary to call the attention of the Co-operative Department as well as the Industrial Department, *viz.*, the neglect of cottage industry. It is stated in the report on co-operation that only one co-operative society of this kind is working in Bangalore. This is very disappointing after the enormous efforts made by the Government to resuscitate cottage industries. It is not necessary for me to go into the history of those efforts, but as President of a Co-operative Conference, it appears to me that the Government's attempts failed because they were not based upon co-operative basis. The Department of Industries and the Co-operative Department should join hands and try to develop cottage industries. Societies for nakki-making, lace-making and for embroidery can be formed, raw material can be given to the workers and the finished products purchased. This will be a great boon to ghosha women and will go a long way to relieve their distress.

Audit and Supervision.

I have so far briefly dealt with the different types of co-operative societies that are now in existence in the State and shown the direction in which further development is possible. As regards audit and supervision, there is no suggestion anywhere that the departmental control and vigilance should be relaxed. It would be better if the central banks themselves take up the supervision of the primary societies and propagandist work. But in the present state of their finances I do not think they will be prepared to replace the department. Government have recently recognized the department and increased the number of Assistant Registrars. The suits filed by the Co-operative Societies are being disposed to with greater promptitude than before, but the progress in the execution of the decrees still continues to be slow. Government have issued instructions in the matter to their revenue officers, but a very heavy burden has been thrown upon the Revenue Department, there being as many as 3,899 decrees pending execution with them at the end of the year 1922-23. You have to consider whether it is not advisable to adopt the British Indian system of sending decrees for execution of Civil Courts, but if you decide that the present system should continue, you will have to consider whether it is not advisable to give a bonus to the Shekdar on decree amount recovered so as to serve as an inducement for prompt execution. Personally, I would prefer the employment of a Shekdar for a particular area, say, a Sub-Division, at the cost of the societies of that area. That will relieve him of the Government work and enable him to devote his full time and attention to the execution of co-operative decrees.

State Aid to Co-operative Societies.

"State aid is said to be dangerous to co-operation" and that is the reason why the Government of India have abstained from giving financial aid to the societies except in the beginning of the movement. But the practice in European countries is different. "Some societies aided by the State in France have had a long and successful career." We in Mysore have followed the example of British India, but I think the depressed class societies will not be able to stand on their legs unless Government gives them financial aid in the

beginning. Government will in time of emergency come to the aid of a central bank as the Government of India did during the time of the great war. But it is its present duty, I think, to arrange for a fluid reserve for the apex bank. The Central Co-operative Bank does not seem to require any such aid, but if its amalgamation with the Provincial Bank takes place as recommended by the Co-operative Committee, the question will assume importance and will perhaps be brought before the Government.

Satisfactory as the progress of the Co-operative movement has been in the State it has not yet added to national wealth or the prosperity of the State as a whole, for the foreign money-lender and merchant are still flourishing in the State. In spite of the large number of agricultural credit societies established in the State, the Marwadi has been throwing his tentacles into the remotest parts of the State and the Labbe merchant is thriving as an exporter of grain. The foreign trade continues to be in the hands of outsiders and few Mysoreans have succeeded in establishing a foreign agency or depot. Unless the Mysorean is more enterprising and prepared to take greater risks, he will remain in the background in the commercial world. We must look to the co-operative movement alone to produce men of this kind and when such men are forthcoming, the prosperity of the country is assured.

The rapid progress which the movement has made in the State is due entirely to the interest which His Highness the Maharaja and His Highness the Yuvaraja have taken in the movement. It behoves the members to work honestly and zealously to promote the welfare of the societies to which they belong. They should avoid the main defects of societies, *viz.*, irregularity and unpunctuality in payment and should not allow the affairs of the society to drift into the hands of the Secretary. Says Professor Marshall: "The true co-operator combines a keen business intellect with a spirit full of an earnest faith and some co-operative societies have been served excellently by men of great genius both mentally and morally—men who for the sake of the co-operative faith that is in them, have worked with great ability and energy and with perfect uprightness, being all the time content with lower pay than they could have got as business managers on their account or for private firms. Men of this stamp are more common among the officers of the co-operative societies than in other occupations and though they are not very common even there, yet it may be hoped that the diffusion of a better knowledge of the true principles of co-operation and the increase of general education are every day fitting a large number of co-operators for the complex problems of business management." It is hoped that our co-operative societies will produce men of this type who will carry the movement to higher stages of development.

Paper Manufacture in India.

From the Annual Report of the Board of Scientific Advice for India, we note that the machinery and plant for the experimental pulp and paper factory at Dehra Dun, has now arrived and will shortly be erected.

Enquiries continue to be received, we are told, from parties desirous of exploiting the industry and samples of raw materials forwarded by them and by Forest Officers have been examined and reported on. The laboratory have also been engaged, we note, on an investigation of Bhabar grass with the object of reducing its bleaching cost on the lines which have been successful with bamboo. This promises to yield good results and has reached a stage at which operations can be transferred to the experimental factory as soon as it is erected at the Institute. The bamboo survey of the Angul Division, with which this section has been assisting, has, it would appear, been completed.

Substantial progress has been made on the commercial side. A new factory at Naihati, near Calcutta, is now successfully producing paper from bamboo. Another, proposing to use Savannah grass, is, we note, in course of erection in Assam. We note also in the Forest Chemistry Section of the report that Messrs. Fowler and Bannerjee (Journ. Ind. Inst. of Science, Vol. IV, p. 241) have made a preliminary study of the use of megass as a source of paper pulp and power alcohol.

The first paper mill of the Dutch Indies was recently built at Padalarang for an annual production of 3,000 metric tons of paper, without wood, for printing and the Record Office. Packing paper will also be made from the waste records paper which the local government supplies in large quantities. Rice straw and waste agave and manilla fibres will be utilized as raw materials. Other local plants reitampas, serehn, alang-alang, etc., are to be tested.

The Tenth Mysore Provincial Co-operative Conference.

The following resolutions were adopted :—

1. That suits be instituted in the Court of the Registrar and Assistant Registrars and that decrees be executed by the Revenue Authorities as hitherto and that there is no necessity to give bonuses to Shekdars.

This Conference prays that the cost of special Shekdars that may be appointed for the execution of decrees be met out of the revenue realized from Court Fees.

That the law be so amended as to give power to Assistant Registrars to issue orders of attachment before judgment, the said orders being executed by the Amildars.

2. That a Central Co-operative Depot be started at Bangalore to begin with for the supply of yarn, dye-stuffs and other materials required by weavers and that weavers' societies be formed at important weaving centres and affiliated to the Depot for the distribution of the articles.

3. That Co-operative Grain Banks be established in villages or special areas on the following lines :—(1) The Bank should be open to members who take up shares, payment being made in kind. (2) That a reserve store be formed of grain according to the need of the members and of the villagers generally. (3) That no transaction can be permitted until this reserve store is formed. (4) That after the formation of this reserve, the grain be disposed of in the best possible manner and the profits divided amongst the members.

4. That the rate of penal interest be fixed at not more than one per cent over and above the rate of interest fixed in the bonds and that interest should not be added to principal and fresh interest levied thereon.

5. The question of having a separate Bank, *i.e.*, an apex bank for financing the Co-operative Movement in the State was discussed at considerable length. The majority of members suggested that the existing Provincial and Central Banks should be amalgamated together and developed into a strong apex bank obtaining, if necessary, financial aid from Government and if this were not possible an independent apex bank should be started. After a keen debate on this question in the course of which various defects in the existing financing institutions was clearly brought to the notice of the members of the Conference, it was unanimously agreed that this question be deferred consideration till the next Conference by which time all co-operators will have an opportunity of knowing the valuable recommendations of the Mysore Co-operative Committee on this imprtant question.

6. That with a view to minimize the delay involved in the investigation of loan applications from unlimited societies, a correct property list be prepared for each society showing therein a correct account of total assets and liabilities of each member of the society, that this list be revised every year and that the Registrar after proper scrutiny do fix a limit for each year up to which a society could borrow from the Central Financing Institution.

7. That Building Co-operative Societies be formed at Bangalore and Mysore and other important areas for acquiring sites and constructing houses for the use of members on the hire purchase system.

8. That existing credit societies do set apart a portion of their funds for the purchase and supply of improved seed, agricultural implements and manure and spraying materials through the Agricultural Department.

9. Tnat existing credit societies in Sericultural centres do set apart a portion of their funds for the supply of disease-free eggs and other implements to sericulturists of the locality through the Department of Sericulture.

That wherever possible societies consisting purely of sericulturists be formed for purchase, sale and credit and also for imparting elementary instructions in the method of sericulture, and that for two years at least these societies be given the services of an Inspector practically conversant with sericulture.

10. Resolved that in the existing societies, the membership should be freely thrown open to depressed classes living at the place and that in localities where enthusiastic literate men are available, separate societies may be started.

11. That a beginning be made in the starting of Co-operative Farming Societies and that this step be combined with the means for the elevation of the depressed classes ; that suitable blocks in the surrendered areas of Amrit Mahal Kavals, etc., be started for this purpose and that the Registrar of Co-operative Societies be requested to draw up a suitable scheme for this purpose.

The New Chancellor of the Exchequer.

By The Editor.

An interesting feature of Mr. Ramsay MacDonald's Cabinet is the large number of Economists it contains. Not the least interesting personality included in it is Mr. Philip Snowden, a financial critic of note of previous administrations. Like Mr. Gibson Bowles, he has been a sound, if at times stern, critic of successive British Budgets. Combined to his training as a Member of the Civil Service, which he resigned in 1893, after seven years' of service in it, he has to his credit much native sagacity and mental alertness. The knowledge he gained as a Member of Successive Royal Commissions has helped him no little in his criticism of financial measures. He made his mark as a critic of Mr. Lloyd George's second Budget (1910-11), which, as Mr. Lloyd George himself said, was introduced under circumstances "very unusual" and "entirely without precedent". A feature of that Budget was the enormous growth of expenditure it disclosed. The total expenditure was estimated to reach £171,857,000, which, added to the previous year's deficit, made a total of £198,930,000 to be provided for. This was animadverted upon by Mr. Chamberlain and Mr. Bowles, who declared himself "appalled at the enormous growth of our expenditure". Mr. Snowden in an able and much praised speech representing the Socialist point of view, was "not appalled by the total figures" and "hoped to live to see the time when the Chancellor of the Exchequer would stand at that seat and propose a Budget of 300 or 400 millions." Mr. Snowden has now a chance to realize his hope. And who can say he will not ? Mr. Snowden attacked vigorously Mr. Lloyd George's third Budget (1911–12), which was the one which, of all his famous budgets, attracted least attention. Mr. Snowden, agreeing in this respect with Mr. Austin Chamberlain, entered an emphatic protest against the late introduction of the Budget, thus depriving members of doing their duty by the country in the review of national finance. He also proceeded in a characteristic speech to express his dissatisfaction and that of his followers with the existing state of finances. Revenue from taxation should, he held, be used not merely for the purpose of the meeting necessary expenditure, but should also be applied for the purpose of bringing about a better distribution of wealth. He joined issue with the opinions expressed by the Chancellor of the Exchequer (Mr. Lloyd George) in one of his recent speeches advocating that no one should be exempt from taxation; for in Mr. Snowden's opinion, indirect taxation was "a violation of every just and sound principle". His speech wound up with the (then) startling suggestion that the State should buy up the whole of the land of the country, "root and branch, fully compensating the present owner," and then, "in order to obtain revenue for increased national expenditure, should nationalize the railways." "I conclude," he said, "as I began by expressing my regret that more opportunity has not been given to the House of Commons during this Session to deal adequately with these proposals. The way in which the Finance Bill has been delayed until the very end of the Session is only one further instance of the degradation of Parliament in these later days. Parliament has ceased to be a deliberative assembly, and if such examples as this will only bring to the country a sense of the seriousness of the position in which Parliament now is, then perhaps the present experiences will not have been altogether in vain." Mr. Snowden's valiant criticism proved effective. The next Lloyd George Budget (the fourth one—1912–13) came up fairly early for discussion and interest in it centred round the disposal of the resulting surplus. Old-fashioned critics—among them Mr. Austin Chamberlain—wanted that it should be applied to the redemption of debt. Mr. Snowden, as became him and his principles, was alone in strongly urging that the development fund was the proper destination of the surplus, and that there were many objects such as housing reform, waterways and afforestation, not to speak of insurance, to which the money might most usefully be devoted in order to anticipate demands which would certainly in the future arise from unemployment. It will thus be seen, that from an economic point of view, Mr. Snowden has justified *productive* expenditure, *i.e.*, expenditure on measures intended to increase the productive power of the nation and the efficiency of Labour. Mr. Snowden pointed out—in 1913—that increased prosperity of England was due to some extent to the 13 millions for old age pensions having been abstracted from the spending power of the rich

on "luxuries" and given to the working people and used to increase the staple trades of the country. In the same year, Mr. Snowden moved an amendment to the Finance Bill of 1913 to substitute for the taxation of food "further direct taxes on unearned income and large estates." In doing this, he admitted a set-off of 39 millions per annum "for services for the benefit of the working classes" against the 60 million pounds at which he put their total contribution to taxation ; but, as he denied that the working classes had any interest in the maintenance of the Army and Navy, he considered that even the 20 millions which remained as their net contribution was excessive. Mr. Asquith dwelt upon this point in his reply, demurring to the view that "any class of the community, working class or any other class, can be treated as receiving no benefits from the expenditure of the State upon the Army, Navy, or Civil Service," and urging that the only justification for our "enormous and increasing national expenditure was that it was warranted in the common interests and not in the interest of one class alone." But while he, therefore, protested against setting up a debtor and creditor account as between the working class and the State, he took occation to criticise, on the one hand, Mr. Snowden's estimate of the contribution of the working classes as being too high, and on the other, his estimate of the amount which those classes received as being under the mark ; and pointed to a large growth of expenditure (outside the special items which had been enumerated by Mr. Snowden) in many great departments of State due to provisions which had been made "exclusively for the benefit of the working classes". While conceding the justice of Mr. Asquith's contention, the fact remains that the point of Mr. Snowden's criticism is sound. While something may be claimed from classes which do not directly benefit from particular types of expenditure, it is undoubted that the whole community would benefit by expenditure successfully directed to raising the level in the poorer classes.

Mr. Snowden is not only an astute financial critic, but also one possessed with imagination, which has made his criticism fruitful and constructive to a degree. Given time, he ought to make good. We may, indeed, await some startlingly instructive Budgets—more startling and more instructive than Mr. Lloyd George's ever were or proved to be.

The Match Industry of Japan.

Mr. P. D. Butler, the Acting British Consul at Osaka, has furnished the following report on the match industry of Japan which is at present suffering from acute depression largely owing to an insufficient supply of splints, and the difficulty of obtaining supplies of paraffin and potassium chlorate from abroad.

Mr. Butler points out that Japan produces no paraffin but manufactured potassium chlorate during the War on a fairly large scale. This industry has now been killed by European and American competition, as the Japanese manufacture potassium chlorate from seaweed which is a much longer process than when, as in Germany, it is manufactured from crude potassium. Moreover, the Japanese process requires platinum, which is a very costly metal.

It is now proposed that all Japanese match companies (which control in all some 165 factories) should combine and organize the supply of splints and chemicals. It is hoped to obtain accommodation for this purpose, from Government at a low rate of interest and the Japanese Government are being pressed to exempt from customs duty all materials required in the match industry. Amalgamation, however, on a big scale is not likely on account of the rivalry between the two big companies, the "Toyo" and "Nippon". The Diamond Company of America are also trying to amalgamate with Japanese interests, but this is not likely to materialize.

The last three annual reports on the trade of Japan by the Commercial Counsellor, Yokohama, show that in the period 1914–1919 the value of match exports from Japan was trebled. At that time it appeared probable that Japan would be able to retain her hold on foreign match markets. In 1920-21, however, it was noted that the export of matches had dropped from 42 million gross in 1919 to 28 million gross in 1920. The fall is largely due to the production of matches in China and the protective duty levied by the Government of India. Since then the decline in exports has continued, and fell, from 28 million gross valued at 28 million yen, to 23 million gross valued at 16 million yen.

The U. P. Industries Department.

The Report of the Director of Industries in the United Provinces is a record of quiet rather than ostentatious work. If it records no startling achievements with which to refute the criticism that Provincial Departments of industries can do but little to promote industrial development, it bears witness to useful unobtrusive work, done principally in the fields of industrial education and stores purchase. More striking results would probably have been obtained if shortage of funds had not cramped the Department throughout the year. The report draws attention to the number of large orders which the stores purchase department was able to place with Indian or Indian-domiciled firms, and to the efforts which it is still making to encourage indigenous manufactures. It was to encourage such manufactures that the Department was created; but the economies which it was able to effect by ordering in bulk are also satisfactory. The rules about purchasing through the department have not yet been finally fixed; they have been modified from time to time to meet difficulties of consuming officers, and will be modified further if necessary. The U. P. Government trust that in consequence of these modifications, the Department is now more acceptable than formerly to consuming officers. The Department is still at present on a temporary basis, and will not be established permanently until its success has been demonstrated beyond doubt.

The work of industrial survey, with which the Industries Department was charged some two years ago, is now practically complete. Reports relating to the industrial situation and possibilities of nearly all districts of the province have been published, and the U. P. Government trust that they will be found useful. That Government last year cut down the number of survey superintendents from ten to six. The Director points out that the remaining staff acts as a channel of communication between the Department and the public, and now discharges several useful duties other than those for which it was originally appointed. He, therefore, advocates its retention on a permanent basis. This recommendation is stated to be under consideration.

The scheme to construct an Electrical and Mechanical Engineering College at Lucknow is still stated to be in abeyance for lack of funds, but the building up of the Technological Institute, Cawnpore, has, we note, proceeded with fair rapidity. Instructional courses are in full swing there, and upon the research side several useful investigations were undertaken. The Arts and Crafts School, Lucknow, and its attached Emporium were the object of much criticism towards the end of the year; a searching enquiry held since has disclosed grave irregularities, chiefly in accounts matters, and disciplinary action has been taken. With this exception, the various technical and industrial schools worked satisfactorily; stipends have, unfortunately, owing to financial pressure, had to be reduced in number and value, but as soon as the financial position has improved, the U. P. Government will, it is said, consider whether the full number of stipends should not be restored.

The weaving schools deserve separate notice. The U. P. Government's conclusions about their future were announced last year in a lengthy resolution; the reason why these conclusions have not yet been put into force is that Government thought it advisable to await the Economy Committee's report before taking action.

At the close of the year the Wood-Working Institute, Bareilly, came under the control of the Director by transfer from the Forest Department. In the interests of economy its budget has already been severely pruned, and the U. P. Government are considering how the Institute and the Government Carpentry School, Allahabad, on the one hand and the wood-working industry of Bareilly on the other, should be brought into relation with each other.

Appendix A of the Report, which describes the progress of the principal provincial industries, is of special interest. Government note with pleasure that the coal position has improved and that better relations now obtain between employers and employed. Though many industries were depressed, some did well, and there seems reason for the optimism with which the Director regards the ultimate, if not the immediate, industrial future. The amended Factories Act came into force shortly after the beginning of the year. Many of its provisions are novel and complex, and the rules and regulations have now been worked out, and as care has been taken to interfere as little as may be with existing factory practice, it is hoped that the working of the new Act in this province will not involve difficulties or inconvenience to employers or employed.

National Education.

By D. N. Sen, Bihar.*

The struggle for existence is as keen and cruel among the nations as in nature. The stronger nations, particularly those that have well developed "mailed fists", are not slow in backing up by their armaments the advantages which they possess in the world competition. The fight for food and shelter is as keen and relentless among them as it is among the lower orders of life. Only think of the long suckers, which have been thrown out by them, for exploring the richest soils in all the parts of the world and how strenuously and persistently they are trying to force them deep into the strata they have struck. And in order to equip themselves with the necessary knowledge and power they have built up elaborate educational systems to make them fit for the battle of life. Whatever we do, we do without much knowledge and in a languid way and the lack of organization is patent even to the casual observer touring over India. With India as with all other civilized countries, therefore, education is the most important problem. It has a special application to this country as we have to cover a great deal of lost ground.

Education and the State.

If there be any branch of activity which requires thorough organization from the point of view of national as opposed to individual or communal requirements, it is education. We cannot leave it to the dubious chances of spasmodic private effort even when such effort emerges from its primitive state and rises to the communal level. "Education is a national concern and must be nationalized." Educational activities must be largely guided by organizations or trusts representing the best intellects in the land and supported by liberal subventions by the State. It is only the State which can bring about such organizations and in all the progressive countries of the world, the State is taking an increasing interest in education and accepting larger financial obligations for furthering it. Prior to 1889, the English Universities and University Colleges were dependent for their incomes upon their own unaided efforts, *i.e.*, upon endowments, subscriptions and students' fees, but the total Parliamentary grant for 1921-22 rose to £1,500,000 and in addition a sum of £500,000 for assisting the institutions to provide retrospective superannuation benefit for the staffs of colleges; and the estimate for 1921-22 for Great Britain only was £1,169,000. Our local legislature has had the distinction of passing the educational demands without a demur and it has been recognized that money spent on education is well spent and that the educational investment, though apparently not reproductive at least in a direct way, is in its far-reaching effects vastly more profitable than any other public investment.

The Ideal of National Education.

National life, like plant life, must first of all secure a firm footing in the environment in which it lives. If you have watched the growth of a plant you must have seen that it is the tiny, threadlike roots which first burst through the seed-coat and plant themselves in the soil. Erelong the plant rises on its legs bearing the primary leaves, not unoften crowned with its discarded husk. Its future life depends entirely upon what nutriment it can draw from the soil into which it has sent down its roots and the atmosphere by which it is surrounded. Similarly a vigorous natural life and a propitious environment are the indispensable conditions of progress in power and civilization. Can we say that our children and young men are being trained in healthy surroundings and encouraged to cultivate habits of active life which alone can enable them to build up a sound basis of healthy human growth? It is a well-known fact of Eugenics that defects of inherited constitution can be, to a great extent, remedied by proper treatment. In childhood and in youth we must help our children to build up bodily and mental stamina which will supply them with an inexhaustible store of potential energy and they will be able to draw upon it in the storm and stress of life which await them after they emerge upon their pupilage. Our crowded cities are regular death-traps and their annual toll of both adult and child life is appaling. They do not and cannot supply the suitable environment for the upbringing of our children and our youth. Most of the children at school live with their parents in homes from which it is impossible to remove them in order that better conditions of growth may be ensured. But it is different with hundreds of young men who come from their village homes for Univer-

* An Address delivered at Bankipur.

sity education. We should let them have a better chance of normal growth, mental as well as physical. Patna, the largest educational centre in Bihar, is peculiarly unfortunate in this matter. We may have all that is desirable in the educational institutions themselves and in the hostels under their control. But at their very door across the road lie heavily crowded insanitary areas where disease and death are manufactured in the foul drains and unhygienic habitations. When an epidemic breaks out we have hardly any chance of escaping it; and our inadequate residential arrangements necessitate a large portion of the student population to live in the crowded quarters of the city. This is a serious handicap and can be removed only by teaching and residential arrangements away from the bazaar.

Residential arrangements in healthy surroundings are, however, not enough. Systematic physical training also is necessary. We are very much deficient in play grounds and the games afford facilities to exercise only to a very limited number of students. Japanese students have progressed rapidly in physical culture since the introduction of compulsory drill and military training for the lads. We do not possess any organization for supervising and guiding this important branch of education. The boys in Japan have taken to military training with great enthusiasm and this has contributed in a large measure to the splendid spirit of citizenship which they have developed.

While talking of national education, we cannot forget that we must first of all learn to live before we can attempt cultural accomplishments. Civilization became possible only after the requirements for maintaining the earthly life were amply provided for. The races of primitive wandering shepherds had little chance of developing the arts of civilization before they migrated into well-watered valleys and settled down to agriculture and industry. What are we doing for our agricultural and industrial pursuits? The claims of these two departments of national education have been sadly neglected. Where an English farmer grows four blades we grow only two. We are so ignorant that we cannot dispose of our own raw materials and send them out to all the places in the world for being turned into finished products and resold to for our use. A national system of agricultural and industrial education alone can secure the necessary foundation for a superstructure of higher culture. The loin-clothed rustic in the miserable mud-hole and living on a perpetual starvation diet cannot be expected to sustain on his narrow shoulders and lean members the heavy weight of modern civilization with its exacting demands upon the intelligence as well as the physique of the individual. Life is now a strenuous battle and the weaklings have little chance in the struggle. With most of us, old age comes prematurely and with many there is a breakdown before our powers have attained their full normal growth.

Cultural Education.

In an ancient land like India the claims of cultural education do not require any special advocacy. We have to remember that with us it is not like beginning with a clean slate. The finest elements in Indian culture have been so well preserved, not merely in dust tombs, buried relics but in actual lives of men who have devoted themselves to the task of keeping the light of ancient Indian culture burning with a clear flame that it would be simply suicidal to ignore them in the organization of our studies. They are not a part of our dead past but the soul and inspiration of our living present. I am speaking of course of the ancient Indo-Aryan culture. It is possible for an English University (Oxford) to give up Greek or Latin classics, for neither Greek nor Roman history is a part of English history in the same sense as the early history of India is a part of Indian history. We cannot give up our classics at least as an Entrance qualification into our universities, and we cannot make even science a substitute for it. Our classics are a part of ourselves and have been woven into the warp and woof of our national being. No ideal of Indian culture can be complete without an essential basis in ancient Indo-Aryan culture. India can never be self-conscious and understand herself properly her deep-rooted instincts, ideals, aspirations and sentiments, unless this stratum of her sub-conscious mind is awakened into full consciousness. Sanskrit drama and literature have found due recognitions in the curriculum of our University studies but the whole of the literature carrying in it the highest spiritual culture of the Indo-Aryans have no necessary place in our courses for the earlier graduation. Though well-equipped with a fair knowledge of European philosophy, our graduates go out of our universities in utter ignorance of the Indian interpretation of life, without even a hurried glimpse of the higher sunny uplands of the culture of their forefathers,

where the ideals of their race have been formed and visions of unparallelled grandeur have descended upon them. The most memorable period of ancient Indian history is the ten or twelve centuries which followed the time of Buddha. There is a rich and ample literature of this period both in Pali and Sanskrit, but if the present conditions are allowed to be perpetuated they will for ever remain a sealed book to our undergraduates.

While speaking of Indian culture, we cannot forget that among India's heritage we must count the priceless treasures which have been brought into India by our Moslem brothers. Among the world forces which have built up nations and empires, Islam occupies a very important place. The penetrating power and the simple grandeur of the message of Islam is a great national asset. The music, poetry, painting, sculpture and architecture and the literature and philosophy of Moslem India compel respect and admiration and a university which ignores them does not deserve to be called Indian. And at the present day, India stands face to face with tremendous forces which the Christian civilization of the West represents. The contact with the West has broken to pieces the crust which isolated us from the rest of the world and the culture of the West is pouring into India through every avenue of approach and the power which it represents is electrifying us into a new life. Modern Indian culture, therefore, is a complex whole and it is the problem of our universities to present them in a form which will be readily assimilable to the thirsty young souls who throng our colleges. These three priceless elements in Indian humanity of the present day must be harmonized to form the future structure of Indian civilization. That harmony is not true harmony which seeks unity by an effacement of individual differences. True harmony is unity in the midst of difference. A symphony is not composed of a single monotonous tune but is made up of many harmonious notes which in their sweet blending constitute the beauty and sweetness of music. Every culture represents music of the human soul struck upon the lyres of our hearts by an Unseen Hand, a burning flame which is a part of the great central Effulgence, a mighty tidal wave from the ocean of Eternity. The waters which roll down the Jordan or those which well up from the perennial springs of Arabia have joined here in the land of our fathers and in their harmonious blending will make it rich and compel it to yield golden harvests for the benefit not only of India but also of the world at large. Our task and unique privilege is to assimilate the rich pabulum placed within our reach and turn it into the very flesh and blood of our nation. I am just back from Taxila, the mother of Universities, and have carried back with me memories which will last me a life-time. There in the very heart of that valley where many world civilizations have met, not always in peaceful friendliness but often in the midst of the jar and clash of contending arms, as I lay awake in bed in the early morning, the sweet chant of the Moslem Prayer borne on the still morning air had reached my innermost heart and thrilled it with joy. At that moment could I deny that it was the same human cry calling upon the Infinite which has stirred the heart of man in all times and climes in the history of the world, whether in Musjids, or Cathedrals, or Temples and filled it with pure delight ?

A Cardinal Defect.

I think it is impossible to deny the fact or drown it with spacious arguments that modern Indian education does nothing for what is deepest and noblest in Indian culture and which is peculiarly Indian. And this defect makes the highest academic learning characteristically un-Indian. I do not for a moment plead for communal religious training in our universities. I only plead for fair opportunities to every Indian student to familiarize himself with the richest and finest cultural elements of Indian civilization and imbibe them not merely for the benefit of his own self but of his race as a whole. I only wish to impress upon you the supreme necessity of allowing the Indian student facilities for familiarizing himself with the literature, philosophy and the spiritual culture of India. Ninety-nine per cent of our undergraduates go out of our colleges without any idea about our special heritage and with the disproportionate notions of what the modern world can give them. We take good care to teach them European logic, philosophy and English language and literature and leave their minds entirely blank about the achievements of their own past. We treat the cultivation of our own literature of the modern times as if it were of no moment and compel our young men who receive their instruction through a language which is not their mother-tongue and to express themselves in a tongue with which they can never hope to be at home as with the one which they have imbibed with mother's milk and which is the

vehicle of ordinary thought and expression every moment of their daily lives. We talk of "Indianization" but the first thing that stands in need of Indianization is Indian education specially in the higher stages. I think that our national education, while consisting of the best elements which the modern world offers to us, should as an essential factor aim at first at rousing the latent forces lying in the deepest strata of our own nature and make them throb with a healthy vigour, so that our young minds may be sufficiently awakened and prepared for the assimilation of what is vital in Western culture. Great ideals yet lie asleep in the subterranean vaults of the Indian mind. Let us break open these carnal houses and let the outer light stream upon them and dispel the darkness in which they lie hidden.

Emancipation of Mind.

The highest object of education is to emancipate the mind from moral and intellectual thraldom, *i.e.*, enable the student to act and think for himself. The ideal gardener, though minutely attentive to the infant seedling, devotes very little time to the grown-up trees. His whole effort has only one object in view, *viz.*, to train the plants in such a way as to enable them to require less and less and no help at all. Similarly, though at an early stage, some spoon feeding may be necessary, at the advanced stage of student career, it is positively injurious. It actually cripples the recipient of such help by making him lean upon others, where he should have more and more leant upon himself. In the German universities as the student emerges from school, he is placed under the discipline of freedom. He is free to select what studies he should take up, what lectures he should attend, where he should live, and what standard of living he is to adopt for himself. Perhaps this sudden release from tutelage has an unsteadying effect upon at least weaker among the undergraduates. But the object is quite clear, *viz.*, to build up a sturdy manhood for the actual battle of life. In the British universities the student is never entirely released from guardianship, though the amount of liberty he enjoys is large and at this final stage; the value of self-control and self-discipline is fully recognized as character-forming elements. The corporate life is nowhere else so strong or well organized as among American undergraduates and there the social side of a student's life is entirely and thoroughly organized by students themselves. While it will be readily admitted that in all well-managed institutions undergraduate enthusiasm must not be allowed to waste itself in unnecessary effervescence, it is at the same time equally true that it is really injurious when the spirit of guardianship overshadows and thwarts free and healthy growth. The sense of responsibility is exactly proportionate to the liberty allowed to an individual and the former can never have a chance of free development when the latter suffers from too much interference. The roadway to freedom which now lies open to our future generations, will only be a blind lane unless at the last and final stages student life is based on self-control, self-discipline and self-respect. This is how they grow in all free countries and if we have decidedly set sail for that goal, the soundest basis of training will always be the inner initiative and the inner control.

The Teacher.

The subject of this evening's discourse cannot be closed without a reference to those to whom the work of educating the young is to be entrusted. Our effort at education is bound to be a failure unless we have a highly trained body of teachers who will take to education as the supreme business of their lives and devote themselves entirely to the cause of culture. For this it is necessary to offer them such inducements, pecuniary as well as opportunities of self-culture, as would draw the best products of our universities. Men have never been drawn to this path of life by the glitter of gold and they do not expect to pile up fortunes by service as teachers. But two things are absolutely necessary as a condition of the success of the teacher's life, firstly, that the burden of his worldly cares should be lifted fron his shoulders and secondly that ample facilities should be afforded to him for study and investigation. The wage-fund for this branch of national service should be ample for enabling the teacher to keep the wolf away from his doors, to maintain himself and his family in a fairly decent way, to provide for the education of his children and to retire on a competence in old age. When the youthful teacher enters into his profession his education as a teacher just commences and unless he has opportunities for a fresh advance in his studies or enquiries, he soon becomes a fossil, his work a dreary routine and in proportion as he deteriorates, he becomes unfit for the responsibilities of the position he holds in his profession. In England the Government has assumed by Parliamentary legislation, the whole burden of superannuating the teachers

of primary and secondary schools and these are not called upon to make any annual contribution to the Pensions Fund. In the Universities and University Colleges, each member of the staff is insured in one of a selected number of companies, the annual premium is met in part by the individual, in part by the University or University College. I have already mentioned in the earlier part of this paper that in connection with the Parliamentary Grant for 1921-22, a sum of £500,000 was provided to assist collegiate institutions to provide retrospective superannuation benefit for their staffs. A national system of education cannot be maintained without a national insurance in the shape of a well provided wage-fund for teachers. We recognize fully that it is not for us to be ambitious in a wordly way as we have taken upon ourselves, a work in which simple living must be combined with high ideals. We only desire that we should be helped to fit ourselves, for our work by facilities for studies and research which we can never hope to obtain for ourselves with the resources at our command and maintain ourselves in a state of tolerable decency.

Creat ve Stage of Education.

I believe that from the beginning of a student's career, he should be encouraged to be a constructor and creator and that from the very first day of a child's enrty into a pupilage to the last, the best that we can do for him is to guide and discipline his spontaneous activity in the lines for which he has natural aptitudes. This is most important for the final and finishing period of his career. It is in the post-graduate departments of a University that the student finds opportunities for developing his intellectual activities in the lines for which he has a special aptitude. Every University fit to be called by that honoured name concentrates its best efforts in the creation of productive power and for this purpose it is necessary to have at the head of the various departments men who have developed creative power and are engaged chiefly in research work whether in science or in arts. Imparting instructions is an important part of education but it can be left to the colleges as at present. Post-graduate studies, however, require a costly staff and a heavy equipment which can be properly undertaken only by a University. Centralization is absolutely necessary for this purpose and any dispersion of funds or of energy would be criminal in a country which is not particularly rich and can ill-afford to undertake a lavish decentralization in this matter. Every University in India, and the Calcutta University in particular, is gradually developing its activities in this direction. We must build up a competent staff of University Professors, Lecturers and Readers who will themselves be investigators and help students to investigate. The necessary laboratories and libraries for the highest work of the University must come into existence before it will be possible to make post-graduate study a success. Let the colleges do the under-graduate teaching they have been doing and supply the residential requirements for the students of the University. But post-graduate teaching must be centralized in the University itself and conducted under the guidance of the University staff. In America where the University is in close touch with national movements, civic, sociological and technological investigations and all studies as have a direct bearing upon national progress are receiving an increasing degree of attention. We do not desire our highest educational effort to consist in weaving fine idealistic cob-webs but in helping us in strengthening and organizing our national activities in politics, commerce, industry and social progress.

National Destiny and National Education.

National history is a part of cosmic evolution and has for its driving force the spirit of God Himself, it is sacred history. We must bear in mind that we have behind us forces which are more powerful than anything finite, temporal and arm ourselves with the hope that our national destiny is in the safe-keeping of God. Throughout the universe everything is pressing for self-expression and self-realization, everything from the tiniest of atom to the unfathomed limits of the human soul. These eager youthful souls who are thronging our colleges and schools have brought in their best as an offering at the altar of the motherland so that their developed minds and powers may be utilized for her glorification. Let our temples of learning rise to the highest stature of their usefulness, fling open their gates to the thronging votaries and be instrumental in bringing to them the fruits for which they have dedicated themselves.

A new joint-stock local electric railway company has been recently formed, which will construct in the first place a line between Warsaw, Grodzisk and Zyrardow and a line from Warsaw to Wolomine to connect the suburbs with the capital. The necessary power will be supplied by the Pruszkow electric works.

Forest Exploitation in Bihar and Orissa.

1922-23.

The Annual Progress Report on Forest Administration in the Province of Bihar and Orissa for the year 1922–23 is full of valuable information. We note that Mr. Nicholson's report embodying the result of his survey of the bamboo forests of the Angul district and the neighbouring Feudatory States was printed and distributed during the year. The terms on which leases may be granted for the extraction of bamboos are, we note, under the consideration of Government and the possibility of the forests, furnishing a profitable source of pulp for paper manufacture, is being examined. Messrs. Balmer, Lawrie and Company extracted 104,534 maunds of sabai grass from the reserved and protected forests of the Singhbhum and Porahat divisions for which they hold a renewed lease up to the 30th November, 1927. The annual royalty realized from them amounted to Rs. 23,336. The sabai grass of the Chaibassa division was sold as before through the permit system after meeting the requirements of the privileged raiyats. The revenue from this source was Rs. 3,605 as compared with Rs. 2,801 of 1921-22, the increase being due to the enhancement of the scheduled rate. A one-year lease for the collection of sabai grass from the reserved forests of the Hazaribagh division was granted for Rs. 930. The three-year lease for the collection of sabai grass of the Sambalpur division was continued and the annual royalty of Rs. 133 was realized.

During the year, Tanstuffs were not in great demand. Sonari (*Cassia fistula*) bark of two ranges in the Sambalpur division was sold for Rs. 150 only.

We note that the propagation of lac on *palas* (*Butea frondosa*) trees at Kundri in the Palamau division was again carried out departmentally. The area of the demonstration lac farm at Kundri is 421 acres of which about 20 acres are culturable land with few or no *palas* trees and the number of *palas* trees on the total area is about 24,000. This area was first divided into four coupes containing 6,000 trees each, but it was subsequently decided to have only two coupes of 12,000 trees each. The object in changing the system and in introducing the new scheme from October last was to increase the outturn of lac, without exhausting the trees in any way as it was noticed that yearly infection had little effect on the vitality of the tree. Under this scheme the trees are free from lac for 12 months at a time but they have to bear lac for a longer continuous period than under the old method. The crop yielded is a full crop from 12,000 trees in June-July and a subsidiary crop (about 40 per cent to 50 per cent) from 12,000 trees in October. This method has, moreover, the advantage of having its main crop (*Baisakhi*) in May-June, which is considered to be of better quality than the *katki* lac collected in October. This scheme is expected to yield about 1½ times as much lac as the earlier method. 52 maunds and 34 seers of lac were collected 'Ari' (*i.e.*, before swarming of insects) from 4,284 trees infected last year and sold for Rs. 5,269. 4,200 trees were infected in July, 1922, and 11,300 trees in October, 1922. 41½ maunds of *phunki* lac collected therefore after swarming of insects were sold for Rs. 2,528, 6 maunds and 4 seers of twig lac and dust for Rs. 125 and 429 bundles of brood lac for Rs. 215. The lac farm came into full working order during the year although there was not a full crop owing to a shortage of brood lac in July, 1922, when only 4,200 trees were infected instead of 6,000. This was due to an attack of a parasite which entered the brood lac and destroyed the larvæ. An outstanding feature of the year was that not only was the necessity of incurring heavy expenditure for purchasing brood lac avoided but that the lac farm began to show a substantial surplus of revenue of Rs. 4,087, the total revenue from sale of lac being Rs. 8,137 and the expenditure including capital cost on account of buildings and stores and establishment charges amounting to Rs. 4,049. The success of this farm may now be considered as assured, as under the new scheme a sustained yield of 400—420 maunds of cleaned lac is expected annually and if the average price per maund does not go down below the level of Rs. 50, the annual gross revenue will be in the neighbourhood of Rs. 22,000, while the corresponding expenditure should be very small after the lac crop has been well established and the expenditure on buildings, etc., has ceased. The price of lac fluctuated violently during the year. In June, 52 maunds and 34 seers of Government lac were sold for Rs. 100 per maund. It was sold at the top of the market. Immediately after the sale prices started to fall gradually and in August Rs. 60

per maund was obtained for the *phunki* lac collected in July. There was a further decline of prices but a reaction set in about the end of November and the price of cleaned stick lac at the beginning of March was about Rs. 80 per maund. The end of March saw a sudden slump which continued after the close of the year. Departmental propagation of lac on Kusum (*Schleichera trijuga*) trees in the Singhbhum and on Kusum and Ghont (*Zizphus Zylopyra*) trees in the Sambalpur division was experimented with on a small scale but resulted in failure in the latter division. The 10-year lease for the propagation and collection of lac in the Angul division remained in force. A new lease for the propagation and collection of lac in the Chaibassa division was granted during the year and Rs. 1,539 were realized as revenue. The question of taking up other areas for lac plantations is under consideration. Mr. Nicholson went to Damoh in the Central Provinces in November, 1922, to study the methods of lac cultivation there and was occupied in selecting areas in the Palamau district for lac cultivation from 2nd March.

The right to manufacture *Kath* from Khair (*Acacia Catechu*) trees in the Palamau division was sold by auction. This is also manufactured in the Angul division under an old lease and monthly *choola* permit system. The lessee who was gven a 2-year lease for the collection of *Kuchila* fruits in the Puri division defaulted in payment of his second instalment amounting to Rs. 10,575 as reported last year. His lease was therefore cancelled and a sum of Rs. 8,568 was realized by certificate procedure and the irrecoverable balance of Rs. 2,007 had to be written off by Government. A sum of Rs. 3,200 was realized from purchasers who were given leases to collect *Kuchila* fruits in the northern and central ranges of the Puri division. Departmental collection of *Kuchila* fruits was carried out on a small scale in the southern range of this division and 288 maunds of seeds were collected for Rs. 727. As the market for the seed was low these were not sold. The divisional forest officer has now received an offer of Rs. 5 per maund and even if the seeds be sold at this low rate the net profit would be about 100 per cent which is satisfactory. The success warrants departmental collection on a larger scale. *Kuchila* seed is also sold on permits in the Angul division.

Kamalagundi (*Mallotus Phillippinensis*) occurs only in the Puri division and the lease for its collection fetched Rs. 505.

Among minor forest produce, we note, thatch and brook grass, silk-cocoons, honey, wax, mahua (*bassia latifolia*) flowers and fruits, etc., have been exploited.

Water Power at Periyar.

The Periyar and the various connected hydro-electric schemes on the Palni Hills, estimated to yield over 100,000 H.P. referred to in the triennial report of Mr. J. W. Meares, lie within a distance of from 50 to 100 miles from Madura, Dindigul, Periakulam and Bodianaickanur municipalities and the busy cotton centres of Virudupatti, Thirumangalam, etc. Possibilities for the use of water power available from these schemes in the Madura, Ramnad and Tinnevelly Districts which are big cotton producing districts, are great and suitable schemes must be possible to be selected by the various municipalities and manufacturing centres in these districts from the many schemes available in the Periyar and Palni Hills. It should also be quite possible and practicable to run the projected Kodaikanal Road Uttamapalayam railway, the Madura-Usalampatti-Theni railway and the Dindigul-Polachi railway with the power derivable from these schemes. The rich Chettinad to which there is no access by railway now, may easily have a light railway run with electricity from Manamdurai or Dindigul to Karakkudi and use water power for electrically lighting the Chettinad more cheaply than by coal power which it is said they are contemplating using for the purpose. A syndicate recently formed for the purpose may consider the greater advantages offered by these hydro-electric schemes.

The West Coast Municipal towns of Palghat, Calicut, Tellicherry and Cannanore have the advantage of being situated within about 50 miles from possible sites of hydro-electric schemes in the Nilgiris and Wynaad Hills and it is believed that it will be quite easy to supply power for lighting and other civic purposes for these towns as also for oil, tile and timber sawing industries in Malabar. For the electrification of the newly projected Shoranur-Nilambur railway which lies through the Moplah District, power can be obtained from the scheme on the Wynaad Hills where the annual rainfall varies from 100 to 300 inches, next only, it is believed, to Cherapunji, and Wynaad is a vast plateau with possibilities for storage also for power purposes.

Madras Fisheries.

The Government of Madras, in reviewing Mr. Hornell's Report on the work of his Department during the past year, consider that Mr. Hornell who, since the close of the year under review, has retired after rendering fifteen years' valuable service to Government, first as Superintendent of the Pearl and Chank Fisheries and subsequently as Director of the Department, is much to be congratulated on the account he has been able to give of the last year of his control of the department. Whilst it must again be emphasised that the Fisheries Department as such is not intended primarily for the production of revenue, it cannot be gainsaid that the financial results obtained are a valuable test as to whether the department is working successfully or not. These results for the year under review must, therefore, have been very gratifying to the retiring Director; for they show that the important revenue earning sections realized a profit of Rs. 76,569 against a loss of Rs. 4,694 in 1921–22 and that the total expenditure of the department in which is included Rs. 43,210 spent on the education of fisher-children and on socio-economic work amongst the fisherfolk exceeded the receipts by Rs. 16,164 only against Rs. 1,18,448 in 1921–22. It should be mentioned that the figures of revenue include an item of a sum of Rs. 9,450, hire charges for the *Lady Nicholson* for the period for which she was lent to the Revenue Department which is still under discussion whilst from those for expenditure have been excluded Rs. 2,920, a proportion of the pay of the Assistant Director (Coast) which the Director considers should be debited to the Salt Department. The Director's debit of Rs. 12,131 to capital expenditure is also open to criticism but these are comparatively small matters which do not detract to any appreciable extent from the favourable aspect presented by the balance sheet of the department as compared with that of the previous year.

The Fish Cannery at Chaliyam is reported to have worked at a profit of Rs. 1,994. There was a satisfactory increase both in output and sales but the gap between them is still far too wide and until it has been greatly reduced the Government consider that it would be premature to consider the question of erecting a larger cannery at a more central locality. The Director's suggestion that the Canning industry which already receives fifteen per cent protection should be still further protected requires careful examination in the light of the figures of production and consumption in India as a whole. The Government state that they are not satisfied that all that is possible is being done to tap important retail markets in the Presidency and the question what steps can be taken to improve matters in this respect is engaging their consideration. They are glad to note that the Director is exploring the possibilities presented by overseas markets. For the first time in its history, the Tanur Experimental Station showed a substantial net profit. Perhaps the most important feature of its operations was the greatly extended scale on which fish meal, a product of considerable value to owners of farms and piggeries, poultry breeders and the Government cattle farms, was prepared, thus rendering possible its sale at the very low rate of 2 annas per lb. Orders have recently issued directing that the station should no longer act as an intermediary between Government departments and the private manufacturers for purchases of fish oil. The loss of Rs. 491 on the Oyster farm at Pulicat is attributed to the destruction of the main bed by the contractor holding the lease of a shell pit adjacent to it. The unfavourable fishing season greatly handicapped the working of the fish-curing yards but a further improvement in the conditions under which work is carried on in these yards is reported. The transformation of the dark, badly ventilated and most insanitary cadjan sheds into substantial permanent buildings with tiled roofs, cemented floors and masonry salting troughs is proceeding apace. The question of transferring the remaining fish-curing yards in the Presidency to the control of the Fisheries Department is under consideration and the Government trust that when the transfer is effected it will be possible to extend to them the improved methods and conditions which are now common to the yards under the control of the department on the West Coast.

The number of private oil and guano factories in Malabar and South Kanara increased from 542 to 647. Most of these may be said to owe their existence to the Fisheries Department, for, it is the demonstration by that department of improved methods of extracting fish oil which has rendered their successful working possible. The Director estimates the total value of the 32,000 tons of guano and

12,000 tons of oil they produced during the year at Rs. 36 lakhs. An industry with an output of this value represents an addition to the economic resources of the country which is by no means negligible. There was no branch of the work of the Department during the year the results of which reflect greater credit on Mr. Hornell and his staff than that of the Pearl and Chank fisheries section. The re-organization of this section effected during the year converted a loss of Rs. 18,771 into a profit of Rs. 38,286, notwithstanding the debit to it of the cost of an extensive pearl bank inspection which, in the opinion of the Director, revealed the most promising prospects of a very successful pearl fishery in 1926 or 1927. In view of this and of the fact that the *Lady Nicholson* has been found by the Revenue Department to be very suitable for the inspection of the Laccadive Islands, the proposal to dispose of the vessel has been reconsidered and she will now be retained for the joint use of the Fisheries and the Revenue Departments. About equally satisfactory results were obtained from the inland piscicultural operations the net revenue from which is reported by the Director to be Rs. 20,451 as compared with the loss, on the methods of calculation adopted by him for the purposes of this report, of Rs. 10,127 in 1921-22. The attendance of an officer of the Fisheries Department at the sales of important tanks appears to have been largely instrumental in securing increased rentals from them. Valuable work was done in stocking the inland waters under the control of the Department with pearl spot, grey mullets and catla. The attention of the Public Works Department will be drawn to the remarks in paragraph 81 of the Director's report regarding the defects in the construction of the sluices at the Chingleput moat farm. The inshore fishing experiments on the Coromandel Coast with Malabar canoes were closed down during the year and the Government now await with interest the results of the experiments in fishing with the Danish Seine net which will be initiated on the arrival of the motor fishing launch now on its way to India. A master fisherman has been engaged for this purpose and the Government trust that the Director's advocacy of trials of the Danish Seine will prove to be justified. In paragraph 72 of the report, the Director suggests that the Government of India should be requested to subsidise to the extent of Rs. 3,000 the work which is being done by the department in supplying biological specimens to educational institutions throughout India. Whilst the Government do not consider that there are sufficient grounds for such a request, they are of opinion that further efforts should be made to make this work self-supporting. The Director is therefore, requested to examine the matter again.

Temperance and socio-economic work continued to occupy a large share of the attention of the department on the West Coast, and if the department were regarded purely as a commercial department, the expenditure of Rs. 43,210 incurred on this branch of its activities would be transferred from its budget to that of the Labour and Education Departments. The Fisheries Training Institute and elementary schools continued to do useful work. The number of fishermen's co-operative societies on the West Coast increased from 60 to 63 though the number of members fell from 3,581 to 3,327; the paid-up share capital, however, increased from Rs. 81,702 to Rs. 85,916 and the amount of loans disbursed from Rs. 2,53,303 to Rs. 3,14,101 of which loans to the total amount of Rs. 1,20,033 were disbursed for industrial purposes.

A wonderful new city called Canberra is springing up in Australia. It is to be the federal capital, and as Australia's next National Parliament is to meet there, the essential Government offices and buildings are being rapidly completed. Canberra will bear the same relation to Australia as Ottawa does to Canada, and Washington to the United States. The site, which is in the New South Wales, belongs to the Federal Government, and the ideal city which is being built will be governed by the National Assembly, irrespective of separate State laws. The site is still almost virgin bush. It is a beautiful, rolling, sparsely-wooded plain of about nine square miles, 2,000 ft. above the sea level and surrounded by three ranges of low mountains. The sea is seventy miles away. The climate is said to be perfect. A prize town-plan designed by the Chicago architect, Mr. W. B. Griffin, about 10 years ago, is being followed in constructing the city. The plan includes three great ornamental lakes, surrounded by beautiful parks and buildings, the main buildings being the Parliament Houses on one side of the lakes and the university on the other. The seat of Government will be connected with the sea by a corridor of land leading to Jervis Bay—an immense land-locked harbour where the whole British Navy could find shelter.

Economics in the West.

M. Maurice Le Bas, in a paper read before the recent Engineers' Congress at Liége, remarked on the comparatively small number of mines in which electric signalling is adopted, and attributed this to the aloofness of many mine-owners, conservatism and the desire to avoid new troubles. Only 78 replies were received to a *questionnaire* on the subject sent recently to 300 collieries and metal mines in France, Belgium, the Sarre and Dutch Limburg. The statistics obtained show that 65 pits in France and 21 in Belgium are equipped with mechanical signalling only, and 40 in both countries have mechanical signalling supplemented by telephones and electric bells. Seventeen have complete electric systems in normal service, eight have been recently, or are being, equipped with electric apparatus, and six had their electric equipment destroyed during the war. Twelve mines have not yet adopted electric signalling, and the owners of seven are opposed to such a system. Four collieries in Limburg are using electric signals with success, and two have been equipped too recently to enable an opinion to be formed. Some concerns, though generally satisfied with their electric systems, recommend greater simplification and endeavours to secure increased robustness of apparatus, which it is important should be watertight. All users agree that electric signalling is quicker and safer than mechanical signalling.

GERMANY AND TRADE ROUTES TO THE EAST.

London.—The possible orientation of Germany towards the East is discussed in an article in the *Journal of Commerce*, which points out that while Germany continues feverishly to reconstruct her mercantile marine, "there are many people in Germany who no longer accept the theory that the future of the country 'lies on the water,' but that it is to be sought rather in the Near East, which is the gateway to the Far East, and that, therefore, the trend of German policy must follow that direction. The same applies to all the Central European States. There is a close economic connection between Central Europe and the Near East, the one, in fact, complementing the other. From the economic point of view, the Near East offers many advantages to Central Europe, and not the least important are those afforded by the Black Sea district. ..... At present the whole of the Black Sea district is suffering from the effects of the war, but these will be overcome, and when the normal processes of trade are resumed Russia will be exporting instead of importing, as at present, the surplus of her agricultural produce, and Asia Minor, to say nothing of Bulgaria and Roumania, will be deriving the benefits of the methods of intensive cultivation which are now gradually being adopted. This increased production will very largely find its market in Central Europe in exchange for manufactured goods. The natural route along which this exchange of commodities will take place is the Danube and the Black Sea. Already improvements are being made on the Danube with these developments in view. River craft with a larger carrying capacity are being built, and as soon as the volume of traffic increases, transportation facilities on sea-going lighters will be arranged from the mouth of the Danube to Bulgarian ports, Constantinople, and Odessa. Plans are in contemplation, and even in progress, for making the larger tributaries of the Danube, —the Save, Drave, Theiss, and Moldau— navigable over long stretches, and the Rhine-Danube and Elbe-Danube canals will contribute their respective quotas of traffic. This Danube-Black Sea water-way will provide Central Europe with an East means of access to the Near East, and the facilities could be increased by a canal connection between the Black Sea and the Caspian, whence the heart of Asia could be reached."

THE SILK INDUSTRY.

While the silk industry in France continues to make progress, the production of raw silk has greatly diminished and the country is becoming more and more dependent on foreign sources for its raw material. To remedy this state of affairs, the Minister of Agriculture is taking steps to carry out the recommendations made some time ago by experts on the subject. These include the cultivation of dwarf mulberry trees and the selection of strong and robust species, as well as the improvement of the raw silk producing stations. Last year France's raw silk production amounted to 198,000 kilos, but consumption totalled 5,307,000 kilos, necessitating foreign purchases to the value of about five million kilos or 1,500,000,000 francs. It is not expected that the new measures will bring the home production up to the point of satisfying the demands of the industry, but with the franc at its present low level every kilo saved is of importance. The Conseil Général of the

Rhone department has decided to offer prizes for the cultivators who produce in 1924 the largest quantity of silk cocoons.

A World Power Conference.

It is announced that a World Power Conference is to be held in connection with the British Empire Exhibition next summer. The conference will take place during July and is being arranged by the British Electrical and Allied Manufacturers' Association. The object of the Conference will be to consider how the industrial and scientific sources of power may be adjusted nationally and internationally: By considering the potential resources of each country in hydro-electric power, oil and minerals; by comparing experiences in the development of scientific agriculture, irrigation and transportation by land, water and air; by conferences of civil, electrical, mechanical, marine and mining engineers, technical experts and authorities, and industrial research; by consultation of the consumers of power and the manufacturers of the instruments of production; by conferences on technical education to review the educational methods in different countries, and to consider means by which existing facilities may be improved; by discussions on the financial and economic aspects of industry; by conference on the possibility of establishing a permanent world bureau for the collection of data, the preparation of inventories of the world's resources and the exchange of industrial and scientific information through appointed representatives in the various countries.

Italy as Castor Seed Grower.

A conference has been held at the Italian Ministry of Agriculture to consider the question of growing castor seed in order to furnish lubricating oil for aviation and other transport purposes. It is believed a considerable crop of castor seed could be grown throughout the southern provinces of Italy. At present there is a large import of castor oil from British India.

Electrification in Norway.

According to a statement by the Nordische Gesellschaft, Lübeck, official statistics have been published to the effect that 1.7 million persons, or about 65% of the entire population of Norway, are supplied with electric power or light by either State or municipal electric works. This percentage represents the entire town population and about 54.5% of the inhabitants of the country. The plant for electric light and power erected by the State and municipalities and completed in 1921 cost over 500 million kroner, exclusive of that erected for special industrial purposes. The total value of installations for lighting, heating, cooking and motor purposes in Norway at the beginning of 1922 was estimated at 250 million kroner and that of the electric plant already erected for the requirements of householders, or in course of erection, at about 730 millions, or, together, about a milliard kroner.

An Encyclopædia of Imperial Trade.

The Federation of British Industries have been actively engaged for some time in examining the question of inter-Imperial trade. The labour involved during this investigation in collecting and collating economic information about the Empire, and particularly as to its resources and requirements in raw materials, led the Federation to believe that a comprehensive survey in a form convenient for easy reference by the ordinary business man would be of very substantial value in promoting the development of Empire trade. They have therefore undertaken the compilation of a comprehensive survey of the resources and possibilities of the Empire. The idea is to collect all available information likely to be of service to the producer of raw materials, the manufacturer, the merchant, or the financial house, and, in fact, to compile a convenient encyclopædia of Imperial trade. The various Governments of the Empire are assisting in supplying much of the information upon which the work will be based. The survey, which will be in ten volumes, will cover the resources of the Empire in food and raw materials, and also the requirements, present and prospective, in relation to production. The Prince of Wales is contributing a Foreword to the series, in which he recommends the survey to the attention of "all those who have at heart the proper organization of the Empire's natural wealth." It is hoped that the series will be complete by the spring of 1924, and the publication will thus coincide appropriately with the opening of the British Empire Exhibition. The following will be the titles of the volumes:—Vol. 1, Food Supplies; Vol. 2, Timber and Timber Products; Vol. 3, Rubber, Tea, Coffee and Spices; Vol. 4, Textiles and Textile Yarns; Vol. 5, Leather, Hides, Furs, etc.; Vol. 6, Fuel; Vol. 7, Metals and Minerals; Vol. 8, Oils and Fats; Vol. 9, Chemicals, Dyes, and Fertilizers; Vol. 10, Communications.

Artificial Silk.

Considerable interest was aroused by the statement on the subject of the artificial-silk industry made by Mr. P. E. King at the Leicester Conference of the Textile Institute. It was

pointed out that while the world's production of real silk was given at 59,000,000lb., the estimated production of artificial silk for 1922 was 79,738,000lb. To this last total the United States contributed 23,500,000lb., Great Britain 15,340,000lb., Germany 12,500,000lb., and Belgium, France, and Italy 6,300,000lb. each. The growth of the artificial-silk industry is claimed to be without parallel among the textile industries of the world, and there is a growing belief that substitutes for silk will ultimately replace the natural fibre. There is no wearing apparel for women except boots and shoes into which artificial-silk cannot enter. There are at the present time four distinct types of artificial silk—chardonnet or nitro-silk, cuprammonium, viscose, and acetate silk. The first named is manufactured from cotton which is converted into nitrocellulose, the process being similar to that for the manufacture of guncotton. Cuprammonium silk, which was produced in the first place at Elberfield, is also made from cotton, but woodpulp can also be employed. This variety of silk is being produced in fine filament form, as fine or even finer than real silk. Viscose silk is entirely British in origin, and its successful development has been mainly due to research work carried out in Great Britain. The raw material is woodpulp. Acetate silk, now termed Celanese, is the newest of the artificial silks. Cotton is the raw material usually used. All varieties of artificial silk are more lustrous than real silk, viscose being a specially lustrous variety. The dyeing of artificial silk is at the present time the subject of much research work, especially the dyeing of Celanese silk, which will not dye with direct cotton, sulphur, and vat colours. Chardonnet silk is still being manufactured in France and America, and cuprammonium silk is being made in Germany, but on the Continent generally the tendency is for viscose to supplant cuprammonium silk, and this type of artificial silk forms the largest proportion of the total production. It is being made in ever-increasing quantities in Great Britain and America. At the present time the leading American companies are planning an expansion of their production facilities, and Courtaulds, Limited, who have done so much towards the development and use of artificial silk, are about to erect a large plant in Canada.

Trust and Combines.

The timely letter by Sir Edward Manville and the subsequent correspondence in *The Times* on the question of combinations in trade should serve a useful purpose in dispelling some of the popular misconceptions in regard to industrial organization. Sir Edward Manville made the point that if "trustification" was permissible to Labour, it could not in equity be denied to Capital. The more important part of his argument, however, was concerned with combination as an inevitable development of industry. The day has long gone by when the public interest was best served by the perpetuation of what was known as the free play of competition. Costs are inevitably higher when a number of small concerns work one against the other on an uneconomic basis than when an industry is scientifically organized in such a manner as to reduce to the lowest possible point overhead charges and such expenditure as is entailed by competition. That side of the matter is obvious to any intelligent person who has studied the history of industry, and Mr. David Evan's letter showed, in the specific case of tinplate manufacture, how advantageous organization has been, not only to the masters, but to the workers. The real point on which attention should be concentrated is to secure the advantages of combination without its abuses, to which, by its nature, it must be liable. The extraction of unreasonable profits through combination is not legitimate, nor is it in the public interest that monopoly should rest content with present achievement, and make no efforts to improve matters or undertake research. That way lies stagnation rather than progress, but because danger exists, it is unreasonable to refuse the benefits of organization, or to place obstacles in the path of those who desire to bring it about. Before the war the railway companies sought to bring about improvements by amalgamation, and were restricted from so doing by Parliament. Subsequently, when the Government itself took over the railways, the first thing it did was to introduce the group system. Clearly this fact suggests a hopeful line of inquiry.

Dispatches dated 18th September last, from the Acting Commercial Secretary, British Embassy, Tokio, give estimates of damage done by earthquake and fire to the Japanese cotton industry. It appears that some 970,000 spindles out of 4,338,000 were put out of action. Of these about 239,000 were entirely destroyed, 360,000 crumbled and the remainder partly damaged.

Books in Brief.

Short Reviews of Recent Books.

International Year-Book of Agricultural Legislation for 1922.

Published by the Institute of International Agriculture, Rome. Price 60 Frcs.

As usual, we welcome this excellent publication. The text is in French and the Analytical introduction in English. The latter by Prof. Giovanni Carrasu, is both lucid and comprehensive. We would draw particular attention, at this moment, to the Sections on Fiscal and Tariff Measures, Animal Husbandry, and the Trade in Animal Products, and Co-operation, Insurance and Credit. The volume is well worth its price.

Speeches and Documents on Indian Policy, Vols. I & II.

Edited by Prof. A. B. Keith, D.C.L., D.Litt. Published by the Oxford University Press, London and Bombay. Price 2*sh.* net each.

Professor Keith, Orientalist and authority on Constitutional Law, has done a great service by the publication of these two volumes. They fill a long-felt void. In a long but well conceived preface, Prof. Keith sets out what may be called the *raison d'etre* for the publication of these volumes. Almost the first sentence in it is this : "The elections to Indian legislative bodies at the end of 1920 mark a definite epoch in the history of the British Empire in India." And almost the last sentence is this : "India cannot attain full self-government until the Indian army is prepared, without British aid, to maintain internal order and repel the attacks of frontier tribes." Prof. Keith writes sympathetically and his preface may be taken as a token of the reasoned goodwill of a large section—to say no more—of Englishmen towards India. The documents included in these two volumes are all of first rate importance for a proper understanding of the course of British history in India. The first volume ranges from 1750 to 1858; the second from 1858 to 1921. In the latter, we find included Mr. G. K. Gokhale's Political Testament (1915), Memorandum as to Post-war Reforms signed by 19 Elected Members of the Indian Legislative Council (Oct. 1916) and the Scheme of Reforms passed at the 31st Session of the Indian National Congress held at Lucknow on 29th December 1916 and adopted by the All-India Moslem League at its meeting on 31st December 1916. The selection is admirable and the editing leaves little to be desired. The index is a fairly copious one.

Agricultural Progress in Western India.

By G. Keatinge, C.I.E., I.C.S., Director of Agriculture, Bombay Presidency, 1907 to 1921. Messrs. Longmans Green & Co., London and Bombay.

Mr. Keatinge is so favourably known by his "Rural Economy in the Bombay Deccan" that a further volume by him on Agricultural Progress in Bombay needs hardly any praise from us. Good wine needs no bush. Dedicated as it is "to the land-holders and cultivators of the Bombay Presidency" amidst whom he lived and moved for twenty-seven years, this publication will go far to keep his memory green with them. Its object is to estimate, as Mr. Keatinge says, the progress that is made in agriculture in the Bombay Presidency, to analyse the causes of agricultural progress in India and other countries, and the conditions in which it takes place. The obstacles to such progress are also indicated and the outlines of a general agricultural policy are suggested. We would specially commend for serious study the chapters on the Criterion of Agricultural Progress, Holdings (including the Appendices I, II and III dealing with sub-division of holdings, etc.), the human factor, and an agricultural policy for India. The twelve points of this policy are well worth consideration by those interested in the welfare of the agriculturists of India. A satisfactory agricultural policy would mean much for this country. Towards the satisfactory evolution of such a policy, the present volume is an excellent contribution. Written by one who ardently loved his work as Director of Agriculture and whose desire to see progress was both real and active, it should be at the elbow of every man who takes anything like an intelligent interest in the agricultural progress of this country.

Principles of the New Economics.

By Lionel D. Edie, Associate Professor of History and Politics Division of Current Industrial Problems, Colgate University. Published by George G. Harrap & Co., Ltd., London and Calcutta. Price 10*sh.* 6*d.* net.

We have read this striking volume with unabated interest. Mr. Edie has broken new ground even in the statement of old principles. The idea underlying this work is to restate

with emphasis the human element in Economic progress. Mr. Edie approaches the subject from the psychological and historical viewpoints. The effects produced on economic processes by the industrial applications of modern Science are given by him the weight they deserve. He makes it plain that modern Economics cannot be satisfactorily understood unless its historic, mental and physical background is well understood. Professor Edie's plan of the work shows the cardinal ideal underlying his treatment of the subject:—Part I treats of Economic Psychology; Part II of Economic Institutions and Factories, and Part III of Economic Adaptation. The viewpoints taken may not be entirely new but the method of treatment adopted and the manner in which the existing economic system is unfolded are admirable. The book is excellently conceived and executed. We have no doubt that it will attract the wide attention it deserves, East and West.

People's Banks : A Record of Social and Economic Success.

By H. W. Wolff, Fourth edition, newly revised and completed. Published by Messrs. P. S. King & Son, Ltd., Orchard House, Westminster. Price 10*sh.* 6*d.* net.

In issuing this edition of his most famous work, Mr. Wolff reviews with just pride the progress of the co-operative movement the world over. One desirable alteration, in view of the altered conditions, has been made in this edition of this book: the arrangement by countries has been replaced by arrangement according to systems. This is a book that should be in every co-operative library; more, it should be in every co-operative institution.

M. E. J. Indices for 1920 and 1921.

A few copies of the Indices for the *Mysore Economic Journal* for 1920 and 1921 are available. Those who require both or either of these copies should apply early to the Manager, M. E. Journal, No. 19, Gundopunt Buildings, Siddicutta, Bangalore, India, and obtain them.

Acknowledgments.

1. Compulsory Labour Service in Bulgaria.—By MacLazard. 2*sh.* 6*d.*

2. Problems and Methods of Vocational Guidance.—By Dr. E. Claparède, Professor of Experimental Psychology at the University of Geneva. 2*sh.*

3. Application of the Three-Shift System to the Iron and Steel Industry. 2*sh.*6*d.*

[Published by the International Labour Office—in the Studies and Reports Series B (Economic conditions). All are worthy of careful perusal, particularly the second of the above-mentioned three Reports.]

4. India as She was and as She is.—By Annie Besant. Price Annas 6.

[In this the following idea is developed: The only argument against India's Self-Rule is her submission to Other-Rule. It is the historical sketch from "How India Wrought Her Freedom" brought up-to-date. In the last two pages are set out the reasons why India wants Self-Government. A closely reasoned pamphlet.]

5. Poems by Indian Women.—Edited by Margaret Macnicol, L.R.C.P.&S.E., Poona.

[A charming volume in the Heritage of India Series. It contains 110 selections written by 56 women in 14 distinct languages. Almost every part of India is represented in it and all religions except Jainism and Zoroastrianism. The authoress deserves to be warmly congratulated on her production, which is from every point of view a unique one.]

We are glad to see our contemporary, *The Illustrated Canadian Forest and Outdoors*, in its new garb. It is one of those journals whose arrival we always await with interest. As usual, it is spritely and spirited and we wish it all success in its endeavours to popularize forestry and fire-protection.

Mr. H. Gordon Selfridge, addressing the Bradford Textile Society on the subject of the requirements of the retail trade, emphasized the importance of organization, which was the apex of business. Those in a position of authority, continued Mr. Selfridge, should give encouragement, which meant inspiration. There should be a determination to do things better and still better, for nothing in the world was done as well as it could be done. There was too much inclination for men to act according to their own wishes, but they were not doing their duty as citizens if they were not doing all in their power to advance the prestige of the country. The man who failed in business from inexperience, or shortcomings for which he was not to blame, was entitled to another chance. He strongly advocated taking a certain risk. "Safety first" was all very well as motto for the bus companies, but there was joy in a fair risk, and it was really almost necessary to progress.

The Franco-Portuguese commercial agreement, signed on January 30th, 1922, by which either country granted most-favoured-nation treatment to the other, and which was repeatedly extended (last time for a period of three months ending June 15th, 1923), was not renewed on the date of expiration. As from June 16th, therefore, all imports from Portugal into France and *vice versa*, are subject to the ordinary customs tariff. This decision on the part of France, which was arrived at by the Government on the recommendation of the Ministry of Agriculture, in order to protect the wine-growers in the South of France, is aimed principally at Portuguese wines, for which the duty has now risen from 24.65 to 98.40 francs per hectolitre. This, of course, practically puts a stop to the export of Portuguese wines to France, which traffic provided an important return freight for the French regular lines to Morrocco, Algeria and Tunis. Thus, for the port of Rouen alone the import of Portuguese wines in 1922 amounted to over one million hectolitres, which represented at least 100,000 tons freight and an income of more than 7,000,000 francs. A retaliation by Portugal in the form of prohibitive dues for French trade and shipping is natural, so that the French Government would seem to be merely assisting the wine-growers at the expense of other branches of industry. French goods arriving in Portugal before June 15th, or despatched before that date will pay the dues which were in force before the rupture.

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The Mysore Economic Journal

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The Thirteenth Meeting of the Board of Agriculture.

By A Member of the Board.

The Thirteenth Meeting of the Board of Agriculture was the first to be held in an Indian State. If the members of the Board had any say in the matter, it certainly would not be the last, for they one and all took away with them the most pleasant memories of Bangalore. Never has the Board been so hospitably entertained as it was in Bangalore and Mysore by His Highness the Maharaja, whose weighty speech at its opening meeting gave a most auspicious send-off to its proceedings, and whose continued interest in its deliberations gave the greatest satisfaction to its members. And never have better arrangements been made for the comfort of its members and for the efficient transaction of its business than those which were made by Dr. Coleman and his staff.

This is not intended to be even a brief summary of the proceedings of the Board. It will be realized that space does not permit of this when we mention that the minutes of each day's work took over an hour to read the next morning. But a few comments on the various items in the agenda, will, we feel certain, be of interest to the readers of a Journal which has always devoted a large share of its space to the discussion of agricultural questions.

The Board of Agriculture has long since proved its worth. The time has long gone by when it was possible to ask what good could be derived from collecting agricultural officers from the ends of India, at vast expense to Government and to the dislocation of their work, to discuss problems in regard to which they could equally well give their views on paper. The advantages of thrashing out questions in debate no longer need be pointed out. Time and again the combined opinion of the Board has been of the greatest help to the Government of India. But, valuable as is the work done by the Board both in Sub-Committees and in Full Board, we doubt whether the chief value of the Board lies there. It lies in the means its meetings provide outside the formal discussions for contact between the members of the various Provincial Departments. An officer from one Province can learn more about what is going on in another Province by ten minutes' conversation with an officer from that Province than he could by reading any number of reports, however well written. It is in this interchange of ideas more than in anything else that is to be found the great justification for the existence of the Board.

In recent years, the Board has always had amongst its members officers of a Department which is very closely connected with the Agricultural Department, namely the Veterinary Department, but never has it included so many officers of another Department equally closely connected with it, namely, the Co-operative Department, as it did this year. It was therefore very suitable that the first and perhaps the most important of the questions on its agenda should be "to review the progress made in non-credit agricultural co-operation in India and to consider ways and means of stimulating further progress". The views expressed by the very strong Sub-Committee which dealt with this question and by the Full Board were those which have been consistently advocated by this *Journal*. It was held that the progress of non-credit agricultural

co-operation must depend upon the successful expansion of credit work as the good credit society is the best training ground for the more elaborate and efficient forms of production and sale. It was also held that much of the distributing and propaganda activities of the Agricultural Department could and should be taken over, as they have, in fact, in some measure already been taken over, by the existing organization of credit societies which is the foundation of the whole movement. Whilst expressing the view that in most provinces in India, the relations between the Agricultural and Co-operative Departments are becoming increasingly close, the Board advanced the proposition that the organization of non-credit forms of agricultural co-operation, should be a definite branch of co-operative work entrusted to officers specially selected and specially trained for the purpose. Agreement could not be reached as to whether these officers should be officers of the Co-operative Department lent to the Agricultural Department or officers of the Agricultural Department lent to the Co-operative Department. Enthusiastic co-operators wished to take over all the propaganda work of the Agricultural Department but equally enthusiatic agriculturists were not willing to be deprived of this means of getting in touch with the ryots. The discussion on the whole subject was a specially interesting one and its value was much enhanced by the contributions made to it by Mr. Calvert, the Punjab Registrar, now the doyen of the Registrars, who was able to illustrate every aspect of the questions at issue from his profound knowledge of the rural economics of the Punjab. The Board, at his instance, passed a resolution emphasising the importance of the study of rural economics in educational institutions including Universities.

The next three subjects on the agenda of the Board related to cattle—cattle-breeding, cattle feeding, dairy farming and animal husbandry generally. These were dealt with in the first instance by a Cattle Conference consisting on this occasion, of members of the Board but which is hoped to convene annually. Of the lengthy report of this Conference, it is unnecessary here to say more than that it marks a distinct advance in the tackling of one of India's most vital problems in systematic fashion.

Subject No. V was a hardy annual or rather biennial as the meetings of the Board are only held once in two years and it comes up at every meeting. Speaking generally, it was 'Forecasts' and specifically, it was the consideration of the steps taken to give effect to the recommendations of the Board of Agriculture of 1919 for the improvement of forecasts and the final statistics of the area and yield of crops in India. On this subject, the Board had anything but progress to report but the fault could in no way be laid at the door of the Agricultural Department. The blame rests with Government whose policy of retrenchment has resulted in cutting down such statistical staffs as were employed and, what is even more disastrous in the present connexion, in stopping the compilation of the rail-borne trade statistics which for many crops provide a most important check on the estimates of production. The Board could only recommend that these should again be started, repeat generally the recommendations of its predecessors and award a good mark to Madras, the only Province in which the Director of Agriculture has been given a Statistical Assistant. It urged that, as the standard outturns for various crops which are now in use have resulted from crop-cutting experiments made over a series of years, no change should be made in them except as a result of crop-cutting experiments sufficiently numerous to possess a definite statistical value. It further suggested that, when fields are being chosen for crop-cutting experiments, no attempt should be made to select so called "average" fields but that the selection should be made purely mechanically so as to give a statistically random distribution. This method is likely to give a much truer 'average', that is a standard outturn much more in accordance with the true facts than any other. It is the method followed by the Behar Department of Agriculture, which selects fields for experiments simply from the Settlement numbers, the area to be cut being taken at a certain distance in a certain direction from a definite corner of the field. The area actually cut when the crop is paddy is very small indeed, only 1/1600th of an acre but in order to ensure that this is measured accurately, an ingenious instrument recently invented by the Settlement Department is used. It consists of a frame which guides through which light rods are slid without bending the stems of the crop. When in position, the rods make an equilateral triangle of known area.

Subjects Nos. VI and X on the agenda of the Board can be taken together for purposes of comparison and contrast. Subject No. VI

was the consideration of the progress made in giving effect to the recommendations of the Indian Cotton Committee of 1917-18, with special reference to the work of the Central Cotton Committee and the recommendations of the Board of Agriculture of 1919 in regard to cotton marketing. Subject X was the consideration of the steps taken to give effect to the recommendations of the Indian Sugar Committee relating to the Coimbatore Cane Breeding Station. In discussing these questions, the Board had the advantage of the presence of two members of the Indian Cotton Committee, Messrs. Henderson and Roberts and of its Secretary, Mr. Noyce, now Secretary to the Government of Madras in the Development Department, and of two members of the Indian Sugar Committee, Mr. Noyce, its President and Mr. Sayer, the Secretary of the Sugar Bureau. Mr. Burt, the Secretary of the Indian Central Cotton Committee, was able to give the Board a most encouraging account of the work of that body. Two important Acts have already been placed on the Statute Book, the Cotton Cess Act which has placed the Central Cotton Committee in possession of funds for the furtherance of research for the benefit of Cotton Growing and the Cotton Transport Act which enables Provincial Governments to schedule definite areas for protection and to prohibit the import of outside cotton into such areas except under license. It is intended that such licenses shall only be issued to meet genuine trade requirements and, in particular, to meet the needs of cotton spinning mills situated within a protected area. The Act has already been put in force in the greater part of the Bombay Presidency. The Central Cotton Committee has established a technological laboratory in Bombay, where accurate spinning tests on new cottons, a necessary adjunct to plant breeding, will be carried out. The Director of the laboratory, Prof. A. J. Turner of the Manchester College of Technology, has just arrived in India and was present at the meeting of the Board. The Central Cotton Committee has plenty of work still before it, more especially in regard to the regulation of gins and presses and the establishment of open markets in other parts of India on the system which works so effectively in Birar but the work it has already done fully justifies the view expressed by Mr. Noyce that the original Cotton Committee had every reason to be proud of its offspring. A different story has to be told of the happenings since the appearance of the Sugar Committee's Report. That Committee was unfortunate in that its report was published at the beginning of the worst slump in modern history and that its recommendations have had, in consequence, to await the better times which appear to be so long in coming. The Agricultural Departments throughout India are doing all they can to put those recommendations which concern them into practice but no funds have yet been made available for research though Mr. Sayer was hopeful that the sugar producers of India would shortly be able to take an important step in this direction. Meanwhile, even the recommendations of the Sugar Committee that the cane breeding stations at Coimbatore should be transferred to the control of the Imperial Department of Agriculture from that of the Madras Department, should be made permanent and should be enlarged to enable breeding work on thick canes to be undertaken have still to be acted on. A tribute to the excellence of the seedlings sent out from Coimbatore was paid by members of the Board from all parts of India in which they have tried and it is to be hoped that the Government of India will now find themselves able to act on the very definite support given by the Board to the recommendations of the Sugar Committee on this point.

Subject No. VII, the consideration of the question whether it is possible and desirable to make Government farms including experimental, cattle breeding, seed and demonstration farms pay, must have been included in the agenda of the Board as a result of the zeal of Retrenchment Committees in various Provinces who are averse from any expenditure which does not yield an immediate return in hard cash. The Board came to the eminently sound conclusion that the essential factor in the working of a Government Agricultural Station is the fulfilment of the object or objects for which the station is established. It is obviously desirable and indeed essential that a station should be managed as economically as possible but the Board very rightly held that the financial aspect is of entirely secondary importance and should not be allowed to interfere with the object or objects of the station. The Board was in thorough agreement with the view so often put forward in these columns that there is now no place in the agricultural scheme for the demonstration farm as such and that the objects of such a farm can be very much better secured by demonstration work on the cultivators' own plots.

Subject No. VIII, "to review the progress made in popularizing the use of improved agricultural implements and power machinery in India with reference to the provision of facilities for sale, hire and repair, propaganda, and the designing and testing of implements," could unfortunately not be discussed as reports from several provinces had not been received. Subject No. IX, the utilization of indigenous supplies of phosphates is such a technical subject that it need not detain us nor need Subject No. XI, the desirability of bringing waste lands under cultivation with a view to increasing the production of food grains. The desirability that every acre of land which can be cultivated should be cultivated is obvious but the steps to be taken to bring this about are by no means obvious and the Board, realizing this and also that conditions vary so greatly in different provinces, came to the conclusion that it would be better to pass no formal resolution on the subject.

It only remains to add a tribute to the high standard reached in the debates on the various questions before the Board and to the skill and urbanity with which Mr. Milligan, who, as Agricultural Adviser to the Government of India is its ex-officio President, conducted its proceedings. It also remains to add, unfortunately, a note of regret that this should be the last meeting of the Board over which he will preside. Since the Board closed, an announcement has appeared in the Press that his services and those of Mr. Parnell, the Madras Economic Botanist, have been secured by the Empire Cotton Growing Corporation for work in South Africa. South Africa's gain is India's loss but it seems little short of disastrous that a Corporation whose object is to benefit the Empire as a whole, should, by depriving India of the services of some of the very best officers of her Agricultural Department, be inflicting what can, from the agricultural point of view, only be regarded as a grievous blow on a part of that Empire. There is a moral but it need not be pointed here.

Prickly Pear Menace.

Prickly pear is spreading with immense rapidity throughout Australia, and so far no practical way has been discovered of eradicating it. The Queensland Royal Commission on prickly pear, of which professor B. D. Steele is Chairman, reports that the area infested with dense pear in Queensland alone is 10,419,6555 acres, and with scattered pear 13,760,052 acres—a total of 24,179,707 acres. In 1913 the densely infested area covered only 3,582,374 acres and the scattered portion 12,224,055 acres, total 15,806,429 acres.

"It will therefore be seen," says the Commission, "that the total estimated increase of infestation during the past ten years amounts to 8,373,278 acres per annum. This means that, on an average, every day over the past ten years an area of approximately 2,300 acres of the public estate has become infested, and partially if not completely ruined by the spread of pear. The daily average increase of dense infestation alone is 1,873 acres."

The Commission declares that all Government policy up to the present has failed because no machinery has been provided for keeping unoccupied Crown lands free, or land occupied by Crown tenants during the closing years of the tenancy, and becaus of the failure of the local authorities to mak use of the powers confered upon them. I is the opinion of the Commission that prickly pear must be recognized as a national problem, towards the cost of which all should contribute. "It is necessary to recognize at once," the Commission adds, "that the entire eradi cation of pear in this State is a task at present impossible of performance. Our efforts therefore should be directed first of all towards checking its further spread and dealing with light infestation. The pear has obtained such a hold that no method of destruction at present known can be profitably employed in eradicating dense pear on grazing country except, possibly, biological means, should such methods eventually prove successful." Three main points of policy are recommended: Prevention of spread within the pear belts, eradication of lightly infested areas, and research on biological lines. The appointment of a prickly pear lands Commission consisting of three members is recommended to give effect to the proposals and to encourage persons to take up prickly pear land on attractive terms.

The Canadian Manufacturers' Association is agitating for the abolition of the Sales Tax. From what is stated about it—it is desented mainly as a tax on certain kinds of manufactures and on imports—one would infer that it is an odious tax, deserving a decent burial.

German Technical Schools for Special Industries.

By Professor Benoy Kumar Sarkar, Editor, "Commercial News", Berlin.

METAL INDUSTRIES.

(*a*) *Smithies of all sorts.*—In Prussia the State maintains schools for special industries in metals at Iserlohn, Remscheid, Schamalkalden and Siegen. The scholars are between the ages of 14 and 17. The course covers 3 years and trains the students for the local industries, such as casting, modelling, engraving, enamelling, galvanizing, the construction of machine-tools, cutlery and smaller steel products.

Similar schools are maintained by the Government of Bavaria at Ansbach, Augsburg, Kaiserslautern, Landshut and Wuerzburg. The course covers three years but is not restricted to the industries of the spot. The technique of electrical installation as well as general metal industry constitute the curriculum.

A school for the manufacture of locks is maintained at Rosswein in Saxony by the Union of German Locksmiths. The course is completed in three half-years. Previous practical work is the condition for admission. The school obtains a grant from the State.

A school for the manufacture of apparatuses has grown up at Hanover under the auspices of the Union of German Coppersmiths. It is at present a part of the school of artizans maintained by the city. The course covers four semesters and is intended for those scholars who have finished the elementary public school and possess at least three years' practical experience.

(*b*) *Installations.*—Schools for Installation-technology are to be found at Cologne on the Rhine as well as at Aue in Saxony. The period of tuition in each is three semesters. Practical work extending over several years is the pre-condition for admission. The technique of installations in all branches,—water, gas, heating and ventilation—forms the curriculum. The Cologne school is maintained by the State while the other receives a grant-in-aid.

(*c*) *Instruments and Machine-tools.*—For education in fine mechanical work there are three schools, one at Goettingen, one at Ilmenau, and the third at Berlin. The course covers 4 years at the first two, and 2 at the Berlin school. By theoretical and practical lessons the scholars are enabled to learn all that is necessary in order to construct according to design the finest instruments for scientific and technical purposes.

The apparatus for telegraph and telephone, typewriters, sewing machines, automatic calculators, cycles, gasmeters, water-meters, taxmeters, photographic and kino apparatus, gramophones, apparatuses and instruments for the dentist's office, electrometers, sliding shutters, safety lamps, incandescent lamps, electrical, optical and mechanical instruments, and such other tools and machines fall within the scope of "fine mechanical" construction which the students are taught at the Berlin institution run as it is by the industries.

There is an optical school at Jena maintained by the State. The course covers one year and comprises photography, optical instruments and especially spectacles.

At Frankfurt-on-the-Main the association of physicists maintains an electro-technical institution where scholars get a 10-month course, theoretical and practical, in electrical work of all sorts.

(*d*) *Clocks and Watches.*—There are several schools for the manufacture of clocks and watches. These also belong to the group of institutions for "fine mechanics". At Schwenningen (in Wuerttemberg) and at Furtwangen (in Baden), both in Southern Germany, the schools are maintained by the State. The school at Glashuette in Saxony, a private institution run by the "gild of German Watchmakers", receives grants-in-aid from the city and the State. The scholars begin generally at the age of 14 and study four years at Furtwangen or three at the other two. The studies comprise, in addition to practical work, lessons in mathematics, projection, drawing, physics, chemistry, raw materials, clocks and watches, electrical engineering, measurements, and business.

(*e*) *Precious Metals.*—Schools for work in precious metals have also to be noted. The one in Wuerttemberg is located at Schwaebisch Gmund and is about 150 years old. The course covers three years and comprises lessons in goldsmith's work, steel cutting, embroidery in silver, "chased" work, etching, colouring, and printing on metals, foundry work, casting and so forth. Chemistry, technology, drawing, and business are attended to. Special stress is laid on the æsthetic

aspects, the questions affecting form and colour.

A school of this type is maintained by the Prussian Government at Hanau. It trains up men and women as sculptors, ivory workers, goldsmiths, jewellers, engravers, lithographers, painters, photographers, watchmakers and "chased" workers. Provision is made not only for gold and silver but also for diamond. The scholar is to be at least 15 years old and must have the certificate of attendance for 2 years at a "continuation school".

In Baden there is a school for precious metals at Pforzheim which also turns out goldsmiths, engravers, enamel-painters, silversmiths, chased workers and chain makers. Previous practical work for 2 years is an admission requirement.

All these three institutions seek to orient themselves to their function as school for "fine arts".

2. Wood-work.

(*a*) *Carving and Cabinet-making.*—There are several schools of wood carving in Bavaria, (Berchtesgaden, Garmisch, Oberammergau, Bishopsheim and Zwiesel) known generally as *Fachschule fur Holzschnitzerei.* Such schools are to be found in other provinces as well, for instance, in Baden, (at Furtwangen), in Hessen (at Erbach), in Silesia (at Warmbrunn and Flensburg), in Saxony (at Freiburg and Leipzig). In Berlin the institution is called *Tischler Fachschule* (Special School for Carpentry).

In these institutions the course covers generally 3-4 years and prepares the scholar for almost every industry in wood connected with furniture, house decoration, and sculpture. Training is offered in drawing, lathe-work, modelling, chiselling, carving, etc. The scholars are at least 14 years old.

The Erbach school is specially devoted to ivory carving. All these institutions focus the attention on the æsthetic side of the industries.

(*b*) *Toys.*—Schools for the manufacture of toys are to be found at Sonneberg (in Thueringen) and at Seiffen and Grunhainichen (in Saxony). The schools serve the local industries and contribute to the training of taste as well as to the introduction of new forms in industrial art. The course covers four years. There are whole-time scholars as well as apprentices who are working in factories.

(*c*) *Carriages.*—There is a school for the construction of carriages at Hamburg. The course covers a year and a half. Wheelwrights, waggonsmiths and coach-engineers are turned out of this *Wagen-bauschule.* The scholars learn also the art of constructing the *Karosserie* for automobiles.

(*d*) *Musical Instruments.*—In Mittenwald (Bavaria) there is a *Fachschule fuer Geigenbau* (for the construction of violin). This school trains the scholars in the art of making not only the violin but also other stringed instruments, for instance, viola, violincello, mandolin, guitar and zither. The course covers 4 years and includes lessons in drawing, playing on the instruments, and singing.

There is a similar school for the construction of musical instruments at Klingenthal in Saxony. It is open to both sexes and in its music section equips the scholars with sufficient knowledge of "harmony", both theoretical and practical, such as may enable them to judge the qualities of the instruments.

(*e*) *Willow-reeds.*—At Lichtenfels in Bavaria there is a *Korbflechterschule* (school for basket plaiting). A similar school exists at Heinsburg in Rhineland.

Everything connected with the manipulation of willow-reeds for the manufacture of baskets as well as with the cultivation of the plant is taught. This course covers three years.

The schools are oriented to the local industries and are calculated to provide a living to the men and women on the spot. As supporters of "cottage industries" they have thus acquired a social significance.

3. Chemical Industries.

(*a*) *Chemical Engineering.*—Chemistry with special reference to the machineries employed in the industries is the chief feature in a number of *Fachschule* distributed all over Germany.

One of the most well-known is the *Gewerbeakademie* at Chemnitz. The course covers 3 years and admits only such students as have completed six years of a higher school after finishing the public school at 14. The scholars are trained to take charge of chemical factories, mining works and laboratories.

The *Friedrchs Polytechnikum* at Coethen (in Saxony) admits scholars on the same conditions as the *Akademie* at Chemnitz. There are the following divisions :—electro-chemistry, photo-chemistry, iron and other foundries, electrical metallurgy, cement-technology, glass-technology, enamel-technology, paper-technology as well as sugar-technology. In Saxony a third school of the same type is to be found at Zwickau. It is known as the *Ingenieurschule.*

In Bavaria there is a *Hoehere Technische*

Staatslehranstalt at Nueberg which has an equally strong division for chemical engineering.

Prussia has two schools of this pattern, both maintained by the Government. They are known as the *Huetten-Schulen* (foundry schools), the one at Gleiwitz in Silesia and the other at Duisburg in Rhineland. The course in each covers 2 years but admits only such scholars as have worked for four years in a chemical factory. One-third of the curriculum is devoted to machines and engineering subjects. The object of these schools is to train up competent heads for the metal industries, iron foundries (including furnace, puddler, steel and roller work), copper, lead and zinc smelting, chemical factories, glass ovens, coke works, factories employing fire-proof building material, wire works, iron and metal foundries, and other allied establishments.

(*b*) *Paper Manufacture.*—There are three institutions maintained by the *Verein deutscher Papierfabrikanten* (association of German paper manufacturers) where paper making is taught. The most influential of these is the division for paper in the *Technische Hochschule* at Darmstadt.

A 2-year course is offered at Coethen in Saxony. But the students must produce a certificate of two years' practical work in a factory. The shortest period tuition is given at Altenburg (Saxony) in the *Technikum.*

(*c*) *Dyeing.*—There is a school for dyeing at Erefeld maintained by the Prussian State. The course covers three years. Practical experience is a pre-condition for admission.

A similar school maintained by the Saxon Government is the *Faerbereischule* at Chemnitz. There is here a division for textile industry.

Dyeing with special reference to textile is taught at various schools in Prussia, *e.g.*, at Aachen, Barmen, Cottbus, M.-Gladbach, Langenbielan, and Sorau.

The Technikum fuer Textilindustrie at Reutlingen (Bavaria) has also a division for dyeing.

(*d*) *Soap-making.*—Private schools for all sorts of chemical industries exist in every large city. The chemistry of soap manufacture is taught, for instance, in a school at Berlin, which is described as an institution for fat, oil, soap and lubricating oil industry. The course covers 3—6 months.

4. Ceramic Industries.

(*a*) *Bricks and Tiles.*—In Saxony there is a school for brick-making at Zwickau. The student must be at least 16 years of age and produce a certificate of practical work. The course is finished in 1 year.

For the manufacture of tiles for roofing Saxony has a school at Glauchen. The subjects taught comprise architecture, roof-construction, building materials, lightning conductors, drawing, chemistry and housing law.

A Prussian school is located at Frankfurt-on-the-Oder. The course covers a year and a half. Chemistry, mineralogy, furnace-technology, mechanics, surveying, drawing and allied subjects are taught.

Prussia has another school of this type. It is located at Lemgo and carries a two-year course.

(*b*) *Porcelain.*—At Hohr near Coblenz in Rhineland the Government of Prussia maintains a school which offers courses in every branch of porcelain manufacture. The training embraces two years. The corresponding school of Saxony is located at Bunzlau.

Importance is attached not only to the chemical technology but also to the æsthetic aspect of the ceramic industries. The materials handled comprise porcelain, earthenware, stoneware, majolika, pottery, and so forth. Drawing, modelling and furnace-engineering constitute the chief feature in the instruction.

The oldest of German schools in this line is the one at Landshut in Bavaria founded in 1873. The course covers two years. Pottery and furnace demand special attention. Bavaria has another school which is located at Sell where the course is finished in a year and a half.

(*c*) *Glass.*—In Bavaria there is a school for glass industry at Zwiesel. The courses are offered not only in glass painting, engraving, cutting, polishing and etching but also in melting, foundry work and the allied technical side of glass manufacture. The school thus serves both fine arts as well as industry and takes the scholar through a three-year course.

At Ilmenau in Thueringen there is a school for the manufacture of glass instruments. The courses cover four years. Physics, chemistry and drawing are the chief subjects. Scientific precision is the aim of the school to promote.

5. Photography.

At Munich there is a *Hoehere Fachschule fur Phototechnik* which offers a three-year course in everything connected with photography. Allied arts such as chemography, photographic printing, engraving, etc., are also included. One division is given over to the film industry. To master the technology, business and literature of film completely the scholar has to devote 2½ years.

Saxony has a school of photography at

Dresden which is really a part of the *Technische Hochschule*. In Berlin also the *Technische Hochschule* has a division for photography. In both these instances the photography classes are supported by industries connected with photography, optical glass and so forth.

Photo-technology in its several branches plays a great part in the printing industry and book trade. At Dresden and especially at Leipzig, the centre of the graphic arts, there are "academies" differently named, which in the courses on printing include those in phototype, engraving, etc.

6. Leather Industry.

At Freiberg in Saxony there is a school for tanning. It is maintained by the "Union of German Leather Industry". Courses are offered in tanning, fats and minerals, chrome leather dyeing, chemistry, fermentation, putrefaction, physics, microscopy, machine-tools and business. The course is finished in one year.

There is a school for the manufacture of shoes at Siebenlehen in Saxony. It is maintained by the city, not so much to cater to the shoe factories, as to the requirements of "home industry" and hand work. The course covers one year. The anatomy of the foot, measurements, shoemaker's last, leggings, cutting, calculation and book-keeping are comprised in the lessons. Drawing, preparation of models of the foot in clay, raw materials, foot diseases as well as surgical shoe-making receive attention.

7. Garment-making.

Dresden has a school for tailoring. The course covers 1—3 years according to the previous experience of the scholar. Special emphasis is laid on the *Kunst-gewerbe, i.e.*, the "fine arts" side of dress-making.

There is a number of schools for the manufacture of laces in different parts of Germany. These are designed not only to serve the local industries and provide means of livelihood to the women in their homes but also to improve the existing types of decoration and add new ones, thus enriching taste and life.

In Saxony there are 38 such lace-making schools. Boys and girls between 7 and 14 are the pupils. Some of these schools are used as workshops by the large factories or business houses in the neighbourhood. And the scholars receive wages at the local rates.

The Government of Saxony maintains at Schneeberg a school for the training of teachers in lace-making. The young women who have already finished a school course in lace-making are taught here to be able to devise new designs and better the old ones.

Saxony has a strong industry in gold and silver lace. A school is maintained by this industry at Erzgebirge. Girls are admitted at the age of 10 and work five years in pearls, buttons, fringes, borders, rings, plaitings, knots, locks, etc.

8. Food Products.

In Bavaria there is a *Hochschule* (college) for the manufacture of beer. Everything connected with brewing, cooking, milling and baking is taught. Researches are carried on in the fermentation and preparations from grains.

At Dippoldiswalde in Saxony there is a school for millers. It is maintained by the city and is completely equipped for milling as well as for the construction of mills. The course covers a year and a half.

Tobacco has a special division devoted to it in the school of brewery located at Grimma. It is a private institution. So far as tobacco is concerned the lessons comprise physics, chemistry, botany, microscopy, as well as fermentation.

For the study of the problems connected with hotel life there is a *Hoehere Fachschule fuer das Hotelwesen* at Buchholz near Dresden. In addition to cooking, hotel-management and raw materials lessons are offered in French and English. Those who have experience as waiters or managers in hotels and restaurants can obtain here the chances for a theoretical equipment extending over six months.

An interesting and highly important announcement has been made by the United States Forest Products Laboratory, regarding de-inking printed papers and making new stock therefrom. The value of such a process cannot be over-estimated when the paper resources of all countries are causing much concern. The idea of taking out ink from old newspapers is not new; it had been experimented at various times and with varying degree of success but no process had given entire satisfaction. The Forest Products Laboratory made exhaustive tests with bentonite and with the most satisfactory results, converting old newspaper stock into new stock which could not be distinguished from the original. One mill has de-inked 1,500 tons of old newspapers which were then made into newspaper print of the desired strength and colour and accepted by publishers as standard.

The Theory and Practice of Inflation.

The controversy which sprang up a few weeks ago on the subject of credit policy has now to some extent been supplanted by more pressing questions, but it is none the less desirable, particularly in view of the Government's emphatic declaration against inflation, to clarify the issues involved in current considerations of the monetary policy to be pursued by this country.

The freedom with which the term "inflation" is used calls for clear definition at the outset of any consideration of its merits or demerits as applied either in general theory or to the particular circumstances now ruling. Inflation may be defined as an increase in purchasing power relative to the goods and services available for purchase. It may thus consist equally well of a decrease in production, accompanied by no commensurate decrease in purchasing power, as of the more usual process of an increase in purchasing power with no corresponding increase in production; or, as at the outbreak of war in this country, both movements may play their part.

If this definition of the term be accepted the indiscriminate charges made in the course of recent discussions, which almost suggest that "inflationist" and "Bolshevist" are interchangeable terms in matters of finance, can be founded only on a misuse of language, says the *Midland Bank Review*.

Types of Inflation.

Purchasing power may be measured by bank deposits and currency in active circulation, and an increase in purchasing power arises from the extension of bank loans. Such loans may be made for three possible purposes, namely, production, speculation or consumption. Scientifically all three forms are mere variants of a single phenomenon. As with coal and diamonds, the same element may appear in widely differing forms. If now the discussion be confined to the first form, namely, the extension of bank loans for productive purposes, it will be seen that in these circumstances the inflation which ensues is but temporary. The goods available for purchase are ultimately increased, although in the interval between the expansion of credit and of production there must be a measure of inflation. In other words, the growth in the volume of purchasing power is followed at a distance by that of production, resulting temporarily in rising prices, which are invariably associated with the movement and which indeed themselves provide the stimulus to increased production. Clearly this type of inflation is not of the Bolshevist kind and proceeds, moreover, quite independently of the standard upon which the monetary system is based. The fundamental fact is not the existence of a gold or paper standard, as the case may be, but the extension of credit with the object of increasing the output of industry, and whether gold or Government credit be the cash basis of such advances is not germane to the outstanding fact of what may be called "productive inflation".

Inflation of this character was before the war a natural and universally accepted incident of improving trade. The difference between present and pre-war conditions, however, lies in the fact that before the war such a development could not in any circumstances continue indefinitely, and actually was checked by the operation of the gold standard. The effect of expanding credit and rising prices was two-fold. First, there was a reduction of the ratio of the gold basis to the superstructure of credit built upon it. Secondly, buying by foreigners was discouraged and imports from outside countries stimulated. This latter effect served to exaggerate the reduction in the gold reserve ratio since gold exports were necessary to pay for the surplus of commodity imports coming in under the stimulus of rising prices.

Pre-war Correctives.

The fall in the gold reserve ratio acted as a barometer in that it gave warning of the presence of undesirable elements. Sooner or later the full productive capacity of the country was employed and any further increase in purchasing power was purely speculative in character, tending to over-trading and the bidding up of prices, and culminating, if unrestrained, in inevitable collapse. In order to avert such an eventuality a check had to be placed upon credit expansion, the means employed being the raising of the charges for accommodation. This result was brought about by the manipulation of the Bank of England discount rate in this country, and by similar central banking rediscount mechanisms in other financial centres.

But the raising of the Bank rate did not merely put a brake upon the process of credit expansion. The higher rates of interest which

it permitted served also to stem the outflow of gold and eventually to attract gold to the centre in which these rates operated. Thus the metal base for the credit structure was strengthened and the ratio of gold to credit tended to be restored to its normal level. In this way, provided the Bank rate corrective was applied soon enough, the ill effects of inflation carried beyond the legitimate bounds of productive capacity were avoided.

Credit expansion of a productive character was never deemed to be of itself an evil. But the distinction between this type of inflation and that which is now to be considered is not always clearly observed, with the result that gratuitous evils are frequently attributed to the most necessary and wholly justifiable credit extensions made to meet legitimate trade requirements. It is important again to emphasise that these additions to the volume of credit are in themselves of benefit and utility quite apart from the monetary standard in operation for the time being. If inflation of this type is a good thing upon a gold standard it is equally good if the standard be of paper, of land values, or of thin air. The standard can only affect the situation according as it tends to restrain or encourage speculative or monetary inflation, to which attention must now be directed.

The effect of the abandonment of the gold standard, in a period during which the Bank was bound to lend when called upon by the Government, was to render abortive the instrument of the Bank rate for the purposes for which it was designed. Without free gold movement and control by the Bank of its own lending powers the rate could not be effective, and thus it was made possible to indulge in monetary inflation to any extent that was found to be convenient or necessary under the exigencies of Government finance.

Monetary Inflation.

What exactly are the circumstances surrounding such inflation? If attention be directed to this or any other belligerent country in illustration of the general theory, it will be seen that war operations involve the provision of vast quantities of food and clothing for large numbers of men not productively employed, and the equipment of these men with all the materials necessary for the carrying out of their campaign of destruction. In other words the economic machine has to be adjusted to economic waste on a wholly abnormal scale, and the difficulty of producing goods in such quantities as to cope with this consumption is accentuated by the reduced numbers and lower average efficiency of those productively employed. In some way or other the Government has to carry through this readjustment, and under modern conditions the weapon by which it does so is that of national finance. First, it has to direct large quantities of goods into the channels of military service by purchasing these goods in competition with already existing buyers. This of itself brings about an increase in the price of commodities in general. But, secondly, it is necessary for the Government to provide itself with the purchasing power with which to effect the diversion of goods into the desired channels. If this is to be done with the minimum of subsequent ill effects, the purchasing power which the Government acquires must be secured equitably at the expense of the individuals who go to make up the nation. In other words, taxation must supply the necessary purchasing power for the Government for the prosecution of its war operations.

Unfortunately, however, it is usually found impossible to raise by taxation sufficient revenue for the carrying on of modern warfare. Consequently loans must be resorted to in order to fill in the gap between the income and expenditure of the Government. It should be noted at once that in peace time any such system of finance is suicidal from the point of view of the Government adopting it, apart from wholly extraordinary expenditure such as the acquisition of reproductive assets. There is no conceivable justification for the failure in normal times to impose adequate taxation according to the system formulated by the electorate in the process of the building of its existing constitution.

Government Borrowing.

But the loans raised for extraordinary purposes may be of two types which, while both are to be observed as purely exceptional expedients, are widely different in their general effects upon the distribution of wealth among the individual members of the community. If subscriptions to the loans are made solely out of the real savings of individuals, then their effect is merely to divert a certain amount of spending power from private channels, in which it might be employed upon industrial development, into Government channels, to be used for the particular purpose in view. Unfortunately, however, there is a very definite limit to the scope of such loans, inasmuch as the community is limited in its saving to the difference between its total output of goods

and services and its minimum total consumption.

The alternative form of loan is that which comprises true monetary inflation. While all the belligerent countries indulged in this method of finance to a greater or less degree during and after the war, a particularly instructive example was provided by Germany, whose Finance Minister boldly announced in the early days of the war that the whole of the extraordinary expenditure due to military operations was to be met by borrowing. The loans varied in detail from country to country, but in the last analysis they consisted without exception of bank credits extended either directly to the Government or to private persons or corporations specifically for the purpose of subscribing to Government loans. Thus, in this country the basis of inflation was supplied by the Government's borrowings from the Bank of England, which provided cash reserves for the credit extended by the joint stock banks in the purchase of Treasury Bills and other Government securities.

The general principle underlying this form of loan, while rarely recognized during the operation of the process, is one of disguised indirect taxation. Hence the readiness of governments which feel themselves to be lacking in stability to resort to inflationary methods of finance. Hence also the utility of the system in cases where it is considered inadvisable directly to impound those resources which are necessary for the carrying on of a great war. But it may be noticed in passing that while from other points of view a capital levy is a most undesirable and even suicidal fiscal expedient, at least it has the merit of transparent straightforwardness—a merit which cannot be claimed for the methods of finance still practised in peace on so large a scale by many countries.

THE HAVOC OF MONETARY INFLATION.

The effect of inflation of the kind just described is not confined to a mere rise in the general level of prices. Indeed this movement is simply the outward and visible sign of much more fundamental changes. Perhaps the most important of these is the distortion of the relations between debtors and creditors. In normal times the movement of prices is so gradual that only those debts which are of exceptionally long duration are substantially affected, as far as the real value of the payments due from debtors to creditors is concerned. But the more rapid and violent the changes in the general level of prices, the greater the scope of the disturbances consequent upon them. In order to realize how radical are the effects of this transference of real values, one need only instance the position of many German companies at the present time, which through inflation have been entirely freed of debt, and the unhappy lot of the holders of fixed-interest-bearing securities issued before the rapid depreciation of the currency set in. These changes, however, are not the sole contributory causes to the social disturbances which must accompany inflation on a large scale. Inasmuch as in a period of rising prices the upward trend of wages must always follow the price movement at some distance, inflation involves a lowering of the standard of life of those who live by the proceeds of the sale of their services, in other words, upon wages or salaries.

The failure to recognize the true implications of this process of inflation is partly responsible for one of its most important characteristics. And yet it should by now be clear that as prices rise the Government's financial requirements increase correspondingly. As a result monetary inflation has an almost irresistible tendency to proceed with gathering momentum in the absence of some such check as that imposed in pre-war days by the operation of the gold standard. It would seem that further demonstration of the truth of this principle is hardly necessary. The examples of France at the time of the Revolution and of America during the Civil War, however, have been followed with conspicuous thoroughness by Russia, Austria, Germany, Poland and several other European countries. Indeed the term commonly used in the exchange market, "stable value currencies," shows that it is something of a distinction not to have followed this procedure during post-war years.

As shown by the examples quoted, the outcome of uncontrollable inflation is inevitable economic collapse. Prices lose their normal relationships as between different commodities, speculation is encouraged, and sooner or later it is found utterly impossible to print money fast enough to meet the requirements of the community. There is everywhere the desire to get rid of money and accumulate commodities, and confidence in the medium of payment is completely lost. Such of old was the experience of France and of the Confederate States. Such more recently was the experience of Russia and Austria and even now of Germany.

Credit Expansion and the Currency Standard.

The subsequent readjustments may be looked upon as the secondary results of inflation. They are indeed of a similar character to those which follow inflation of the pre-war type when the checks to the process are not applied with sufficient promptitude. Both types of inflation conform to the definition of the term with equal precision. But whereas the pre-war type was a necessary accompaniment of increasing production, that of the monetary type is used to meet the cost of immediate consumption. It is the failure to distinguish in practice between these two aspects of the same phenomenon which is responsible for much of the misunderstanding which has characterized recent discussions. The removal of the gold standard and the experience of continental government finance during the past decade, in fact, seem to have suggested that all inflation is necessarily evil, whereas in fact the only evil accruing from that removal is the partial suppression of the automatic check on speculative and monetary inflation and the substitution of a new means of regulating bank credit.

One of the premises which it is therefore most essential to insist upon is that the pre-war currency basis no longer exists and that its immediate resurrection is impracticable. Many of the disputants in the recent controversy regarding inflation appear to study present currency conditions as a mere variant of the pre-war mechanism, with the result that inflation is considered simply and solely in its relation to the gold standard. Apparently any sacrifice, in the way of trade depression and social disorganization, is not too big a price to pay for the taking of a single step in the direction of parity with the dollar. If some magical power were attributable to the ratio $4.86 to the £ there might be good ground for holding such a view, but under present conditions, any ratio, so long as it is moderately stable, is of equal practical utility.

Exchange Depreciation.

A ratio below the old mint par, however, is frequently looked upon as imposing a heavy burden on the country with the depreciated exchange in its trading and foreign financial relationships. But so long as the existing ratio expresses equilibrium between the levels of prices in the two countries no such burden can possibly exist. Failure to appreciate the truth of this assertion accounts for some of the most obvious contradictions in current financial discussions. In one breath, for example, the recent fall in the dollar value of sterling is bemoaned as making an addition to our burden of foreign payments, while in the next the decline in the sterling value of francs is claimed to endow French exporters with an advantage in the world's markets which makes it impossible for our own manufacturers to compete with them.

It is true that a falling exchange for a time gives an advantage in the world's markets to the country employing the depreciating currency, inasmuch as the falling exchange is not accompanied but followed by the rise in the internal level of prices. But sooner or later prices overtake exchange fluctuations, and as soon as the rate expresses equality between internal and external purchasing power the export premium is obliterated and no further advantage accrues to the local exporter. In other words, while a depreciating exchange may for a time act as a stimulant to exports a depreciated exchange cannot act in the same manner. By a similar reasoning it is demonstrable that a depreciated exchange, in the sense of an international valuation of a currency below that which operated before the war under the gold standard, imposes no extra burden in the making of external payments.

Currency Control under a Paper Standard.

Merely from the point of view of external relationships, therefore, there is no reason for deploring the failure to revert to the pre-war sterling-dollar ratio. Hence under present conditions the regulation of our currency should conform solely to the requirements of industry and trade. It is admitted on all hands that business revival must be accompanied by slowly rising prices. Before the war, and, indeed, even now rising prices are considered as a criterion of improving business. The rising prices, however, are merely the popular expression of expanding credit. Why, then, blame the cause while lauding the effect? The two are inseparable, and why credit expansion for productive purposes is an evil when the currency is based not on gold but on the credit of a solvent Government is a matter that still demands explanation. With the Bank of England in control of its own lending power and with national expenditure covered by revenue, checks upon speculative and monetary inflation are at least as efficacious as under the old system. Admittedly the movement may possibly tend to a temporary depreciation

of sterling in terms of dollars or at least arrest the progress towards pre-war parity. But such a tendency must not be taken to indicate reckless indulgence in inflation and the imposition of heavier burdens upon the country in the paymont of its external obligations. Monetary inflation is of course to be scrupulously avoided, as leading almost inevitably to economic collapse. But credit extension to meet the requirements of expanding trade is a perfectly legitimate, and indeed a welcome, development in the present depressed condition of trade. It is not a question of the dangerous distinction between arsenic taken as a medicine and as a poison. Rather is it a case of observing the difference between a poison of the most virulent type and a food of the most essential body-building character.

Paper-Making in Australia.

Investigations carried out by the Commonwealth Institute of Science and Industry indicate that Australian timbers are eminently suitable for the manufacture of pulp for paper-making.

The present Australian requirements of all kinds of paper and cardboard amount to nearly 150,000 tons a year. Included in this are 70,000 tons of newsprint, the demand for which is increasing with the establishment of new daily papers. Within the past twelve months two new dailies have appeared in Melbourne, two in Sydney, and one in Adelaide. Hobart is shortly to have a new evening paper. It is therefore expected that the newsprint requirements will soon amount to 100,000 tons per annum.

A bulletin issued by the Institute of Science and Industry states that by the application of simple chemical principles, the difficulty of obtaining high yeild of strong pulp from the most important Australian woods have been overcome. The modified chemical process, developed in the Institute's laboratory, and later confirmed on a semi-commercial scale, gives 60 per cent more pulp from a given quantity of wood, and it requires a smaller quantity of chemical, less fuel, and fewer men to produce a ton of pulp by this process than by the methods which caused earlier investigators to report unfavourably on the same wood. It has been demonstrated that satisfactory papers can be manufactured from 56 to 66 per cent of Australian wood-pulp. The pulp from the most important eucalypts is capable of being converted into good paper, provided that it is prepared in the proper manner. The cost of manufacturing the pulp depends largely upon the site where it is produced, but the result of the Institute's investigation of the cost of production for one area shows that the cost of bleached pulp would probably be less than £13 a ton.

Existing Forests.

It has been found that Australian eucalyptus trees grow so rapidly that as much as 40 cords (1 cord=100 cub. ft.) per acre can be cut in less than ten years. If areas of this class of forest were worked systematically under the direction of expert foresters there is little doubt, the Institute's report states, that a sustained average output of 15 cords per acre could be obtained on a rotation of twelve years. Contrasted with this, the commonest foreign pulp-woods—spruce— and fir—yield about five cords per acre in forty or fifty years. It will be seen that one acre of eucalypts, such as bluegum, stringly bark, mountain ash, karri, or blackbut, would give in the same period nearly twelve times as much wood as an acre of spruce-fir forest. Three cords of Australian wood are equal to at least four cords of the conifers, so that from a pulp-wood point of view an acre of some of the Australian eucalypt forest land is potentially about fifteen times as valuable as an acre of forign conifer forest. In addition to working certain areas wholly for pulpwood on a short rotation, it is considered that by combining pulping with sawmilling much greater utilization of existing Australian forests could be effected.

Pulping Industry.

It is pointed out by the Institute that in the settlement and development of new country where extensive clearing is necessary the pulping industry could be carried on profitably and be of material assistance to the settlers. Recent estimates (1922-23) show that in Victoria and Tasmania alone the quantity of wood added each year to the forests would in itself be sufficient to supply the whole of Australia's requirements of 150,000 tons of paper a year. With regard to the newsprint the Institute states that chemical pulp could be produced in Australia on a large scale at about £10 a ton—the cost in England of machanical or ground wood-pulp. A proportion of long-fibred chemical pulp would be needed, and would have to be imported, but, it is stated, even this may eventually be replaced by pulp produced from Australian-grown pines.

Industrial Research in the United States.

The remarkable extension which research work has undergone in the United States in recent years, and its importance for the future of American industry and commerce, are referred to briefly in the Report on the Economic Financial and Industrial Conditions of the United States of America in 1922, by the Commercial Counsellor to the British Embassy at Washington.

The attention paid by the Federal Government to this matter is no new development, and the excellence and wide scope of the work done by the Bureau of Standards under the U.S. Department of Commerce, as well as by the Bureau of Mines and other branches of the Department of the Interior, are well known, but what is perhaps not so generally realized in other countries is the close contact they maintain with American manufacturers and producers, and the immense amount of assistance they give to private industrial concerns in the solution of their technological problems. They have established, moreover, an excellent liaison not only with universities and other educational institutions but with individual students in colleges and institutes of technology. The staff of the Bureau of Standards in 1921 consisted of 342 statutory employees in addition to 508 temporary employees engaged in reasearch and investigations authorized by Congress. The appropriations assigned to the Bureau amounted last year to $1,729,000, but in the present year it is proposed to petition Congress for a considerably increased vote.

In 1916 a National Research Council was founded under the Congressional Charter of the National Academy of Sciences, for the purpose of prosecuting and encouraging research in industry. The work of the Council is divided into two main groups, one of which comprises seven divisions of science and technology, each assisted by Advisory Boards and Committees. An an example, at the time of writing the report there were Committees on such subjects as the fatigue phenomena of metals, heat treatment of carbon steel, high-speed tool steels, hardness testing of metals, pulverization, welding, etc. The Division of Research Extension carries on widely diversified activities. In 1920 it helped to found an "Alloys Research Association," assisted the Tanners' Council in the establishment of a "School of Tanning," and initiated investigations in connection with the tobacco plant, macaroni, glass, etc. The Textiles Division made an effort to persuade the industries concerned to undertake the examination of various technological problems. As in the case of the Bureau of Standards, the Council is frequently called upon to advise and assist manufacturers to instal new laboratories or otherwise expand their research organizations. The Council is supported by funds derived from other than Government sources. In 1920 the Carnegie Corporation gave $170,000 for current expenses while the Rockefeller Foundation, the Commonwealth Fund and other similar institutions contributed largely to its upkeep and expansion. To support the investigation on the fatigue phenomena of metals, the General Electric Company in 1920 gave $30,000, while the Du Pont de Nemours and the General Motors Corporation provided $5,000 and $2,500 respectively for the special use of the Council's research information service.

The most notable feature of the industrial research movement, however, is the great amount of investigation work which is being carried on by various manufacturing firms and trade associations quite independently of official support.

In a very interesting publication recently issued by the National Research Council particulars are given of the work done and the staff employed in the private laboratories of some 526 firms and organizations throughout the country, from which some idea can be gained of the general activity in this direction which cannot fail to bring about much improvement in American industrial efficiency.

Important resolutions were passed at the meeting of presidents of French Chambers, held in Paris, at which 102 of these bodies were represented. One of these was that the exploitation of State monopolies which have an industrial character should be left to private industry and that Parliament should suppress the tobacco monopoly not later than next year. The assembly also declared itself in favour of a severe financial control in Germany so that the Reichs budget could be balanced as soon as possible and steps taken to see that Germany was not favoured in the international commercial struggle by insufficient fiscal charges.

The Motor on the Farm.

An International Motor Transport Congress is being organized by the National Automobile Chamber of Commerce of the United States and will be held at Detroit, Michigan, in the summer of 1924. Among the questions for discussion will be the use of the motor car and motor lorry in agriculture, and there is no doubt that other countries can learn many lessons from the United States in this matter. Mr. Charles Clifton, President of the Chamber and Mr. Windsor T. White, Chairman of its motor lorry committee have furnished the *European Commercial* with the following particulars concerning the present extensive use of motor vehicles by the American farming community and the reasons for it.

So far as motor cars are concerned, Mr. Clifton writes that the largest single user of motor cars in the United States is the farmer, who buys 30% of all the automobiles manufactured in the country. The number of automobiles registered in the agricultural regions is 3,200,000, and it has been calculated on this basis that a car is owned at every second farmhouse. One important reason for this situation, says Mr. Clifton, is that the farmer cannot afford to be without his car if he is to use his powers to their full efficiency. His work usually demands that he makes frequent trips to the town, often where there is most pressing need for his service in the fields. A car will make a trip in two hours which would require a full day by horse transport. The Chamber recently made a study of the use of the automobile in agricultural regions. Over 100 farmers gave testimony of the time which their motors saved them. On the average, they stated that their increase in efficiency was around 68%. In other words, the man who runs a farm can accomplish two-thirds as much again when he has a motor car as when he is without one.

There are dubtless many specific cases which will not benefit as much as the average. The gain, too, is measurable in many ways which may not be immediately apparent. Farmers are meeting the labour shortage by driving workers from and to town, who are not willing to spend their evenings in the country. When a piece of farm machinery breaks down the car can be rushed to town for repairs. In case of illness the car brings the doctor quickly. Particularly important too is the automobile in its social benefits. It brings the neighbours nearer. It means that the farmer's wife can enjoy her clubs and church more easily. It enables the children to attend better schools.

Australia is another country which is making wide use of motor transportation in rural regions. A sheep range operator, for instance, owns five stations 75 miles apart, two of which he visits weekly, and the others at least twice a month. A car is kept on each of these properties as well as one at Milburn, where the sheep and wool are marketed. Although the annual bill of this operator for all his cars runs into hundreds of pounds, for petrol, lubricating oil and repairs, it is found to be an absolutely necessary expense, for without the cars it would be impossible to carry on the business.

Profitable Motor Lorries.

Mr. White, dealing with the use of the motor lorry in agriculture, remarks that successful crops are only a part of successful farming. Three important elements need to be cared for in addition if the tilling of the soil is to be profitable. First, in dull times, the farmer needs storage facilities for his surplus. Second, he needs to keep his labour costs low, particularly at harvest time. Third, he must be able to move the products rapidly when the demand is active, especially if he is dealing in perishable goods. In the second and third points, the motor can effect considerable savings.

In Connecticut, U. S. A., for instance, the peach crop this season amounted to over 1,000,000 baskets. Fleets of motor lorries operated every day in rushing the fruit to the New York and Boston markets. The lorry was three times as fast as horse travel. Consequently, one man driving a lorry was able to do three times as much as if he were using a waggon. Furthermore, a farmer who used slower means of travel would find the best of the market supplied before he arrived. In general farming the same situation applies and the agricultural regions of the United States have been quick to recognize the advantages of the lorry. There are more than 300,000 lorries on farms in the country, in spite of the fact that in many rural sections the road conditions are bad. As highways are improved, the use of lorries immediately multiplies, because they can be operated more quickly and at lower cost.

The U. S. Government has recognized the value of this form of transportation. Its Department of Agriculture studied the cases of 753 farmers using motor lorries and found that they were able to save time in haulage of products as follows :—

Size of Lorry in tons	Time saved in Hauling			
	Crops	Milk	Feeding Stuffs	Fertilizers.
½ ..	53%	52%	35%	..
¾ ..	60	42	53	57%
1 ..	65	57	62	52
1¼ to 1½ ..	67	..	66	63
2 ..	71	..	75	75
Over 2 ..	71	..	..	..

The Government Bureau of Public Roads took a census on two of the main highways in Connecticut and found a traffic of 792 commercial vehicles per day. The advantage of the rural use of the motor lorry in protecting the city's food supply has been stated by Herbert Hoover, U. S. Secretary of Commerce, as follows : "The motor lorry has given every town an extended radius of food supplies by some 50 miles, and thereby protects such vital matters as milk and perishable goods."

An illustration of the use of lorries by the farmer in other countries is found in Cuba. Sugar planters are employing them for the transporting of sugarcane from the fields to the mills where it is ground. At present an engineer in that country is making a scientific study of the different uses to which the lorry can be put in the sugar industry so as to assure the most efficient use of these transportation units.

The Revival of Trade with Russia.

In view of the fact that there can never be a complete return to normal trade conditions in the world until Russia takes her proper place once more in the economic scheme of things, any sign of improvement in the financial and commercial conditions of that country will be watched with close interest. Certainly the rehabilitation of South Russia will play an important part in the reconstruction of the Near and Middle East. In this connection, therefore, attention may here be called to the following passage in a report recently issued by Messrs. Samuel Montagu and Co. :—

News of an encouraging nature has been received as to the installation and working of the new currency system in Russia, based upon a unit called the *chervonetz*, by which a measure of stability is expected to be attained that will enable values to be fixed sufficiently for import and export trade to be transacted with some degree of ease. A party of business men representing important firms here has lately returned from visiting that country and investigating the prospects of trade. One member, Mr. F. L. Baldwin, thus comments upon what they observed. It will be noted that his remarks imply the fundamental truth that no currency stability can be achieved without taxation adequate to the needs of a country's budget :—

"The thing that struck us all most, without exception, was the extraordinary ability with which they are struggling with the financial situation. Their policy, as explained to us by members of the Government, is to make their budget balance, to stabilize their currency, and to preserve a favourable trade balance. They are cutting down their expenditure very heavily and pushing up their taxes. In fact, they fear they have put their taxes up too high, and that they may have to bring them down again. Income-tax ranges from 2½ per cent to 20 per cent and they have placed a tax of about 3 per cent on the turnover of the business community, which seems to be the equivalent of our coroporation profits tax. It is Krassin's job to see that they keep a favourable trade balance and that their imports on no account exceed their exports. They are trying to establish their currency on a *chervonetz* basis. A *chervonetz* is the equivalent of our pound. They are backing the new currency by gold or gold securities up to 25 per cent, and by other securities such as short term bills, for the remainder. The law is that no more of these *chervonetz* shall be issued than can be backed in this way. We were told, and I have no reason to doubt it, that this new currency represents about two-thirds of their total currency. While we were there the value of the rouble was falling all the time as against the *chervonetz*. It was a constant remark among us that we only wished the Germans were handling their currency problem as well."

The Ceylon Legislative Council recently adopted a hydro-electric scheme for Ceylon involving a capital outlay on the first stage of over ten million rupees.

Indian Economic Progress.

By Sir M. Visvesvaraya, K.C.I.E.

SOME PRESS COMMENTS.

We publish below a comprehensive collection of Press Comments on Sir M. Visvesvaraya's Address on "Indian Economic Progress" delivered before the VII Indian Economic Conference :—

The Voice of India.—The most important part of Sir M. Visvesvaraya's address, from the popular point of view, is that in which he corrected the egregious statement of Sir George Lloyd, in one of his farewell speeches in India, about the "amazing prosperity" of this country. In passing, we should like to express our sympathy with our late Governor for the accident to his leg which Reuter reports to-day. Sir M. Visvesvaraya quoted the actual words of the late Governor and contradicted them as flatly, as an ex-Dewan of an Indian State can permit himself to do with reference to the utterance of an ex-Governor of a neighbouring British Indian Province. Sir M. Visvesvaraya pointed out with the utmost courtesy that "a people with so low a record of literacy as 6 per cent and so poor an income as Rs. 5 per head per month cannot be said to be equipped for the struggle for existence". Rs. 5 per head is the highest estimate yet made of the average monthly income of the Indian—the magnificent sum of Rs. 60 per annum per head of the population, as compared with Rs. 550 in Canada and Rs. 720 in Great Britain. Rs. 60 per head per annum ! The Military Budget of 1921 was 94 crores or the total annual income of over a crore and a half of the population ! Salaries and expenses of Civil Departments and miscellaneous Civil charges including furlough and pension allowances, came to nearly 60 crores—the year's earning of another crore of the population ! Nearly 31 crores of Home charges spent in England—the annual income of another half a crore of persons ! No wonder that literacy is at a low ebb in India and the death-rate is correspondingly high. Sir M. Visvesvaraya complained of the inadequacy of the official statistics published in India. He was grieved to learn, he said, that as a matter of retrenchment even some of the meagre statistics which were being published till recently, were being discontinued and the country was being plunged into deeper darkness. The most recent instance of this obscurantist economy is the compressing of five volumes hitherto published of the "Statistics of British India" and also the "Statistical Abstract relating to British India" which used to be published by the India Office in London, into a single volume of about 700 pages. The late Mr. Gokhale used to say that the Statistical Abstract prepared by the India Office gave a clearer view of Indian Finance than the volumes issued by the Government of India. The Report of Moral and Material Progress of India which the Secretary of State used to present to Parliament has been supplanted by Dr. Rushbrook Williams' propagandist annual reviews and the "Statistical Abstract of British India" has also been similarly replaced. Perhaps this is one of the few ways in which the Secretary of State evinces his readiness to devolve his responsibility on the Government of India ! Not only is the supply of Indian statistics very meagre as compared with that in other countries, but they are often extremely belated. Professor Keynes, in his book on Indian Currency and Finance, drily remarks with reference to this feature of our administration that "the Statistics of British India do not lend their aid to ruder hands than those of the historian".

Sir M. Visvesvaraya's address at the Economic Conference might form a suitable appendix to the literature of the Baby Week in India which was also opened the other day in Bombay by His Excellency the Governor. We wonder how many of the great ladies and gentlemen who took part in this most laudable enterprise can understand what Rs. 5 a month means in terms of milk, food, clothing and housing. We hope that after perusing Sir M. Visvesvaraya's valuable address they will feel impelled to undertake a little research into that aspect of baby life in India.

The Indian Daily Mail.—Sir M. Visvesvaraya made a long speech. He dwelt with great insistence on the need for more attention to economic matters, for the collection of statistics on a larger scale and for economic surveys of provinces in order to enable active measures of amelioration to be taken. With this part of the speech no one can have any quarrel. In fact, too little attention is being paid to economic proposals which are likely to increase the trade and general prosperity of the country. To a certain extent, it cannot be denied that this is due to the fact that business enterprise is as yet in India in the most elementary stages and that the higher type of business organization has yet to be evolved. Sir M. Visvesvaraya, with his long experience as Dewan of Mysore, in which capacity he introduced numerous measures for the promotion of industry, placed a very good scheme forward for the co-operation of Government agencies and of popular associations in the common task of increasing the productive capacity of the country. He drew largely on his impressions of Japan and Canada which he has visited several times. While we sympathise with him in the complaints which he made, we wish he had borne in mind a little more the difference between conditions in the countries he mentioned and those obtaining in India. He was on safer ground when he pleaded for fiscal autonomy for this country and in particular for the protection of the steel industry, for which in his opinion a very good case has been made out. It is unfortunate that in India even with regard to measures, the necessity of which has been universally recognized, the machinery of Government responds very slowly. This is due to the fact that the authorities do not possess a definite economic programme. So far as economic matters are concerned, it is always wise to avoid controversy and to secure their examination in a calm atmosphere. This cannot be achieved, at the eleventh hour, by a mixed committee. It is unfortunate that economic development in India as in other countries, has got a setback on account of the financial stringency following upon the depression in trade. India has had her full share of difficulties in shipping and exchange; but, as pointed out by Sir M. Visvesvaraya, a time like the present provides

the most suitable opportunity of putting one's house in order, and if the authorities in India seriously consider the economic problems which are calling for solution and set up the necessary organization to carry through the measures of improvement demanded by economists, the results would be most happy.

Sir M. Visvesvaraya's reference to the possibility of increasing the output of agriculture and industry is of great interest even if critics regard his anticipations as unduly optimistic. He looks forward to doubling and even quadrupling production. The more possibility of annually increasing the wealth of the people by even ten per cent per year is very attractive. It would give the people the means of providing themselves with more food and clothing and better houses to live in and, moreover, leave them a little money, with which they could buy small luxuries and improve their standard of life. It is to be hoped that practical steps calculated to bring such valuable results to the country, will receive the earnest consideration of all official and non-official agencies, on whom the responsibility of promoting the agricultural and industrial prosperity of the country has devolved.

The Bombay Chronicle, (24—1—1924).—The presidential address of Sir M. Visvesvaraya is what might be expected from an eminent man of affairs. He did very well to lay stress at the outset upon the most unsatisfactory state of this country's economic statistics, when he pointed out that "the money value of the production from agriculture by villages or districts is not known to the provincial governments". It was an unhappy, if an understandable, compliment of the season for the President to remark that "nobody, except perhaps the Professors of the Sydenham College, go into these root questions" for it ignores the work of other men. Not only are we unaware of any professors of that estimable institution, the Sydenham College, having tackled as yet those "root facts" but the obligations of Government service would prevent, under the present conditions, any frank and honest attempt at such a study, without the student being immediately called upon to account for his boldness. Sir M. Visvesvaraya has exposed, with inevitable brevity, the hollowness of the insulting pronouncement of late Governor, when he astounded his hearers at the opening of the Associated Chambers' Conference by the observation that "the more closely the situation is examined the more amazed does the student become, not at India's poverty but at her prosperity and wealth". We commend the paragraph in the President's speech to the attention of the Conference and trust that, in the economic survey of the country now demanded in the Council of State by a resolution of the Hon'ble Mr. Phiroze Sethna, facts will be brought to light which will for ever set to rest the ghost of such falsehoods which are propagated for their own purposes by men like Sir George Lloyd.

The Hindu, (25—1—1924).—Sir M. Visvesvaraya's address as President of the Indian Economic Conference, extracts from which we publish elsewhere, is of the kind which we might expect from so distinguished a "practical economist". It goes straight into the question of the present low level of economic efficiency, both in regard to economic research and in regard to the economic activities of the State. Sir M. Visvesvaraya sums up the general economic position of India in two words, ignorance and poverty. We are not surprised at this. These two factors are not, of course, altogether independent of each other; for, though we do not hold that to know what we are is to become what we ought to be, it goes without saying that the knowledge of what we are is an essential pre-requisite to succeed in becoming what we wish to be. Ignorance is in a large measure the cause of poverty, not merely ignorance in the narrow sense, but ignorance in the broader sense as well. That to-day, economically speaking, we are among the most depressed nations goes almost without saying; and if there be any among us or outside who hold, with Sir George Lloyd, that, on careful examination, one will be more amazed at India's prosperity and wealth than at her poverty, the statistics which Sir M. Visvesvaraya gives relating to our economic position, ought to convince one of his mistake. It is possible of course, to point to one or two sets of alluring figures, as Sir George Lloyd did, and straightway conclude that India is a veritable *Eldorado*; but, on careful consideration and applying to those figures the correct laws of statistics, one is bound to realize that in accepting one's original estimate one was really in a fool's paradise. These facts bring us to the need for the collection of accurate economic statistics at sufficiently short or long intervals as the circumstances of the case requires. "As matters stand," as Sir M. Visvesvaraya points out, "there is no means of appraising our real economic situation." We don't really know where we are! It need hardly be said that such a state of things is woeful from the point of view alike of the State and of the citizen. Such certainly is not the case in other progressive countries. There ignorance in these matters is dispelled by the necessary periodical publications and by resort to graphical elucidation of the position obtaining for the time being. With us, we are free to admit, things are doubtless improving, but the pace at which they improve, is hardly perceptible. Economic statistics are the foundation of successful national, fiscal, industrial and economic policies not only, but, through them, of national policy as a whole. But here in India such statistics are available neither in sufficient quantities nor in time, nor in the most acceptable form possible. We are yet to have the benefit of a periodical census of production though it is a most elementary requirement, one to which we have drawn attention in the past without result. It is organizations like the Economic Association that should press for such necessaries and help in their preparation. The failure of associations like these to press for the supply of necessary statistics gives room for the charge that they are "officialized" bodies and that Government find the "maintenance (of adequate statistics in proper form) is inconvenient because it leads to the obvious imputation which the figures convey". Students of economics ought not to fight shy of these questions on the ground that they might be mistaken to nourish a political motive. The economist is after all a technical expert. He is just to go where his studies and the figures lead him irrespective of the fact whether his conclusions support this or that political faction. His is the duty to dispel ignorance of economic facts and if he shirks it, he ought to share part of the responsibility for the ignorance and the apathy of the publicist which Sir M. Visvesvaraya so keenly deplores. In the past, it was the publicist that turned economist and most, if not all, of the early Indian economists, were economists because they were publicists. But, as the need for specialization consequent on the complexities, of the modern State increases, the publicist cannot be expected to keep pace with developments in two arts and sciences at one and the same time. The economist ought to supply the facts and

the necessary analyses thereof for the publicist to turn them to the advantage of the State. Both require organization in the bringing up of which both ought to co-operate. The modern State depends so much for its stability and well-being on the soundness of its economic structure and such are the complexities of that structure that one can never exaggerate the importance either of economic statistics or of economic organizations. These are the points which Sir M. Visvesvaraya lays emphasis on and which he illustrates with the necessary wealth of detail we have learnt to associate with him. It is the duty of all concerned, therefore, of the State no less than of the citizen to do everything in their power to provide for these vital needs of the body politic.

The Guardian, (31—1—1924).—The Economic Conference was presided over by Sir M. Visvesvaraya, formerly the Dewan of Mysore, and one of the most successful administrators that held that office, during whose *regime*, Mysore State made notable advance, in economic development. His reading of the Indian economic situation is that it is one of Ignorance and Poverty. The arguments, which he adduced in support of his theory, may be found elsewhere in this issue. To remedy this, he finds that no economic policy has been followed by the administration. As an experienced statesman he proceeded to suggest remedies. His main proposal is the creation of a new economic structure. His words are :—

"We miss, in this country, the equipment and many of the measures usually found in the Dominions and progressive countries to protect or promote their economic interests. This is admitted. The semi-official review, "*India in* 1922-23", states the bare truth when it says that "the country is not at present organized for the production of wealth". It is this organization and other concomitant measures which are overdue, that we want our Government and public men to take in hand without further loss of time. The object of this new economic structure should be to provide the machinery and agencies needed to promote agriculture, industries, commerce, banking, communications, technical and general education and the multiplication of occupations generally."

A network of Associations exists already in the shape of Chambers of Commerce, Manufacturers', Agricultural and Industrial Associations. More such should grow. As in Japan, every city, town, and village, or group of villages should have organizations to attend to increase of production under agriculture, and industries and the spread of education including vocational, educational and discipline.

The secret of success of the Western nations is their genius for organization and the bane of Indian life has been our lack of that instinct. We referred some time ago to the Federation of British Industries. The corresponding Federation in Germany is reported to be an even more powerful organization. Its vitality in the post-war period has not been impaired by the abnormal strain that has been placed upon the nation. On the other hand, it is said, hopes are still entertained of carrying the influence of the Federation so far as to be able to establish international relations on the basis of trade and commercial interests rather than of political diplomacies which are so much in evidence now. A Parliament of industry might be no better than a Parliament of Diplomats, but the fact to note is the strength that a nation is able to display even against its own national government if need be, because of its economic organization.

What would correspond to this in India is the British Chambers of Commerce, now gradually being rivalled by a grouping of purely Indian business interests. But neither of these may by themselves guarantee the best interests of the country. To a considerable extent they are subordinate to agencies outside and may not therefore organize economic production to serve Indian interests primarily. Whereas a purely popular agency might demand a different method of exploitation. Organizations of the latter sort are contemplated by Sir M. Visvesvaraya. Business men have seen their needs and are taking steps to consolidate their power. While that is a step in the right direction, it is incumbent on the people to set up their agencies to voice their own interests.

Sir M. Visvesvaraya looks to the people to take the initiative and expects the Government to co-operate in setting up the economic structure. It may be noted that what are called for are not centralized agencies, but local associations scattered throughout the country, conversant with the conditions of the respective localities and inspired by a real desire to improve them. It is easy to envisage the transformation that would ensue should such associations spring up. District authorities and local bodies are at present the sole arbiters of a district's destinies and they are the ones that are supposed to be in touch with local problems. If, however, it is borne in mind that district administration is, as the late Mr. G. K. Gokhale described, "based on reports from below and on orders from above," it is easy to see how things are led to drift without the administration guiding the people or the latter demanding the proper improvements from the authorities. The district authorities were expected for all practical purposes to serve as the live connecting link between the Government and the people. It is notorious, however, that an extraordinarily few number of these officers have fulfilled that hope.

The transformation that has come about in recent years in district administration calls even more imperatively for an economic structure on a popular basis. The Government is continually enlarging and perfecting its machinery to fulfil its responsibilities. In the process the District Collector of former days has been reduced at present to a glorified Head Clerk labouring hard at complex routine work and feels liberated from the responsibilities of developing the district. The Agricultural, Co-operative, Educational, Medical, Industrial, Railway Departments have their respective agents perambulating in the districts. Acting as agents of a central body located at the headquarters of the Province, none of these may be expected to have the zeal essential for the development of any particular locality. Officials of the district might at one time have cultivated that instinct, but with the growth of central departments, the district officials have been absolved of these duties.

The urgency then of safeguarding the welfare of the district must be felt by local popular organizations. It is well known that the District is the basis of administration in India, and that the District is a large enough area not only for administrative purposes but to provide sufficient scope for local patriotism. To soften the rigours of a bureaucratic system and transfer the responsibility of administration to some extent upon the people, Mr. Gokhale strove hard to bring into existence District Advisory Council. That proposal was knocked on the head by the Government. Had such Councils been in existence for

a decade now, we might already have seen vaster economic developments of the district than Government departments have been able to bring about. The testimony of the latter is that the people are slow to respond to modern ideas carried by them. The absence of agencies which would assimilate these ideas and propagate them to the recesses of the district will always be a disadvantage.

Indian Social Reformer, (2—2—1924).—On such a question as the poverty or prosperity of a country, personal impressions are of small account. The figures which Sir M. Visvesvaraya gives, show how poor India is as compared to Canada and the United Kingdom.

The Daily Express, Madras, (26—1—1924).—Sir Visvesvaraya's suggestions in the direction of organizing the country for the production of wealth, deserve the earnest consideration of the people and the authorities. The Boards of Industries, established at the instance of the Indian Industrial Commission of 1918, have so far failed to justify themselves, and Sir Visvesvaraya's suggestion to make them a statutory body with elected members, may possibly conduce to make these Boards more useful than they are at present. Sir Visvesvaraya wants that these Boards should work in collaboration with the people's associations. As in Japan, he wants every city, town and village, to have a council, committee or panchayat to attend to the increase of production and the maintenance of statistics. In order to meet the difficulty of want of funds, it is suggested that for the next ten or fifteen years the development projects should be financed by loans. He appears to favour an economic survey of the Provinces, to take stock of the existing facilities in them and to explore the possibility of their development. Something of the sort, it will be remembered, has been embodied in the proposed resolution of the Hon'ble Mr. Sethna, which will shortly come up before the Council of State. But, in the existing state of affairs, whether it will be a boon or a curse to Indian enterprise is far from being axiomatic. But Sir Visvesvaraya realizes that any of these, or even all of these, will not be enough to meet the needs of the situation adequately, unless they are also accompanied by a definite start in favour of Protection, which, he considers, is the only sound policy for the India of to-day. Thus, it would appear, that there is a clear need for a radical change and improvement in the present economic structure, which, Sir Visvesvaraya thinks, will only be achieved fully when fiscal autonomy is conceded. But, true as this is to a large extent, even that, we venture to think, will not be enough to bring about a renovated and more stable economic order, if the activities of the Indian people in the field of industry do not show a more marked improvement.

Capital, (31—1—1924).—The Indian Economic Conference, therefore, was held in a live atmosphere and it had a chairman of distinction in the person of Sir M. Visvesvaraya.

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His address was politically stimulating. Without long hesitation, he hacked to pieces the farewell propositions of Sir George Lloyd touching the wealth of India whose growth so startled his mind. It was an easy performance. Sir George, however, had advanced his view not as an economic concept but as a friendly preparation for the Lee Commission. Let it pass. Sir M. Visvesvaraya delivered strong structures against the passive policy of the State and the usual fate of extinction by neglect, awaiting Government enquiries. There were analogies of Japan and the United States, inapplicable to India where the people are summoned to endeavours of true self-help, dissociated from State patronage. I quote a few arresting sentences from his address:—"Lastly to meet the difficulty so frequently urged, of want of funds for developing industries and education at a time of financial strain like the present, it is suggested that for the next ten or fifteen years the development projects be financed by loans. We have some unproductive debt already at present. We spent Rs. 150 crores or more on the great war. We might as well add to that debt a little more to fight ignorance and poverty. These loans will, of course, be Provincial. Such an expenditure, even though financed by loans for which interest and sinking fund charges would have to be met from current revenues, if it helps to reduce illiteracy and poverty, will in the long run prove a valuable investment."

Statesman, (7—2—1924).—The Presidential Address delivered before the Economic Conference last week by Sir Mokshagundam Visvesvaraya, former Dewan of Mysore, apart from certain suggestions with regard to the organization of industry, with special reference to agricultural production,—is pitched in a minor key which might have been inspired by the late Mr. William Digby. Its main theme is the poverty of India, with side glances at Canada and Japan, which are selected for the reason that Sir Mokshagundam happens to have visited those countries. As might be expected India comes off very badly by comparison with either of them. A contrast is drawn first of all between the wealth of Canada and the poverty of India. Figures are given the depressing effect of which is only mitigated by the reflection that statistics can be made to prove anything.

Sir M. Visvesvaraya shows that production in Japan is highly co-ordinated by means of an organization which brings the smallest village into touch with the Central Government. Approving as he does, of the Japanese system, he has naturally little use for the Boards of Industries, established in India as a result of Sir Thomas Holland's Commission. He quotes with gusto a gibe of Sir Alfred Chatterton as to the outturn of these bodies. "They are only manufacturing files," said the ex-Director of Industries in Madras,—a severe, but not unwarranted criticism of the galvanized activities of the Commerce and Industries Department. But what about the other side of the case? The President of the Economic Conference outlines an amazing programme of protection and subsidies which would end poverty and ignorance by one and the same process. He proposes that commercial and technological colleges should be established in every province, and that in order to raise the necessary funds "an impetus should be given to the manufacture of railway materials and rolling-stock in India. The manufacture of locomotives, machinery and motor cars will not take long to be established, if suitable subsidies and freight concessions on railways are granted. In the case of such new industries, dividends at reasonable rates for stated periods might be guaranteed or part of the capital needed for starting them provided by the State. Some money should be spent, or wasted, by the Government to make a start."

New India.—Sir M. Visvesvaraya delivered a striking address as President of the Seventh Indian Economic Conference which is being held in Bombay. He joined issue with Sir George Lloyd on the latter's unwarranted statement about India's growing wealth and pointed out the proper perspective from which the question had to be

viewed. He deplored the fact that the Report of the Indian Industrial Commission still remained a dead letter and suggested several ways in which economic development could be secured. A Statutory Board of Industries, he suggests, should be appointed to work methodically and Provincial Ministers should undertake to develop industries by loans. He also advocated placing of orders for railway materials and rolling-stock within the country itself as they always did in other countries, further extension of cotton mills, reasonable protective tariff, extension of indigenous shipping and banking facilities, gold currency, and rapid extension of technical and industrial education. In the state of flux in which India is now, it is not perhaps possible to inaugurate a far-reaching policy like the one sketched out by Sir M. Visvesvaraya. It is because of this very uncertainty that it is absolutely necessary to achieve Home Rule as early as possible, for otherwise India would be left far behind other Nations.

Commercial Gazette, (7—2—1924).—"The more closely the situation was examined, the more amazed did the student become, not at India's poverty but at her prosperity and wealth"—this was the novel doctrine preached by Sir George Lloyd, the late Governor of Bombay, in November last before a meeting of the Associated Chambers in Bombay. Apparently Sir George was only getting up an argument in favour of the Services, clamouring for higher wages and better prospects, and attempting to show that India was rich enough to afford to pay whatever was wanted of her. This was very generous of him, and perhaps while he was in a vein to leave the ranks happy and grateful, he did not perceive that he was only advancing quaint logic and fantastic propositions. Sir George was seriously challenged at the time. But the most crushing reply has been supplied by the Presidential Address of Sir M. Visvesvaraya at the recent session of the Indian Economic Conference.

Sir M. Visvesvaraya very correctly sums up the general economic position in India in the two words, ignorance and poverty. Education and the development of the economic condition of the country are the two most crying needs of the people. What is there to meet these needs? There is no policy in the administration. There is no continuous and systematic efforts on the part of our public men, to remove the deadweight of ignorance and to lessen poverty. Sir George Lloyd in the speech referred to above made much of the Sukkur Barrage project; we are thankful for this measure and admit, it is a scheme of great economic importance to the country. It will, when completed, benefit agriculture. But is it sufficient to bring the highest development that agriculture in India is capable of? Or is it calculated to remove poverty and bring in prosperity to the country as a whole? Improve agriculture by all means and it admits of vast deal of improvement still. But improve it however much you would, no civilized country, not even India, can maintain existence on agriculture alone. It is only a variety of occupations that may afford full employment to the children of the soil—of course, such a variety as would be suited to the conditions of the country.

Wednesday Review.—Sir Visvesvaraya has rightly diagnosed the causes and the remedy lies in the hands of the people themselves and of those who pose as their leaders. He deplored the absence of a responsible agency, official or non-official, to attend to the measures of amelioration which the economic situation in India demanded.

Plan to Electrify all U. S. Industries.

A matter of very considerable interest was mentioned in a recent message from the New York correspondent of the "Times". A plan for electrifying every industry of any size in the United States at a cost of £1,000,000,000 has been reported to the Convention at New York of the Electric Light Association by the chairman of the Board of Directors of the Westinghouse Electric & Manufacturing Co., on behalf of the designer, a San Fransisco hydro-electric engineer. A system of 220,000-volt transmission lines a few hundred miles apart, spreading over the entire United States, is proposed. The system to be used is a constant voltage one, the voltage control and regulation being accomplished by means of synchronous regulators or condensers placed every 100 or 200 miles along the transmission lines. This is calculated to relieve the power stations of the system's voltage control, and to permit power to be supplied to, or taken from, a line at the regulating stations so that a constant voltage may be maintained and uniform transformers used. The water power from Canada to Mexico and from the Atlantic seaboard to the Pacific will be used to generate electricity. It is estimated that the scheme would save 200,000,000 tons of coal and the labour of 500,000 men, while providing a gross revenue of £200,000,000, a very fair return on the expenditure of slightly over one milliard, to which sum the costs have been estimated.

In view of the fact that a great number of match factories started in India have failed or in difficulties for various mistakes committed by their owners, the local Government have engaged Mr. A. P. Ghosh who has been trained in Japan, Sweden, Germany and England to investigate and submit a report. He will examine all the forests in the province, test the various woods available and advise on the most likely sites for factories. He will examine the existing factories in the province and advise on their defects. He will also draw up plans and specification for a small demonstration factory and advise where it should be located.

How Artificial Silk is Made from Spruce.

[This article which describes the process from hair ribbons to Smyrna rugs, picture films to millinery, has been especially written by A. R. R. Jones, Editor, *Canadian Textile Journal*, to the *Canadian Forest and Outdoors* from which we take it in view of its interest to our readers.—Ed. *M. E. J.*]

It is a long difficult road that the fibre of a Canadian spruce tree must travel from the woods to the wearer, whom it reaches in the form of a thousand useful and beautiful articles—silk shirts, neckties, dress goods or stockings. "From logs to legs" is the way a facetious friend expressed it.

Not so long ago we looked on artificial silk as a sort of fake and accepted it, when the store keeper was honest and frank enough to admit its identity, with much misgiving. But now we revel in the texture and lustre of the marvellous fabrics made possible by the chemists of the pulp mill, conversion plant, and textile factory. For the success of the cellulose silk industry is very largely dependent on the production of a particularly high grade, pure white, sulphite pulp, much of which is made by one of our own Canadian mills.

Many readers of the *Canadian Forest and Outdoors* understand the process of dissolving out the non-cellulose parts of the spruce wood, by cooking chips in a solution of calcium bisulphite, made by burning sulphur and dissolving the gas in lime water, or passing it over limestone in the presence of water.

Four Methods of Conversion.

There are four methods of converting the cellulose fibre into a filament of silk, which are, in historical order, (1) Chardonnet, (2) Cuprammonium, (3) Viscose, and (4) Acetate.

The Chardonnet process was invented in 1884 but was not a commercial success for 15 years. The product is also called nitro-cellulose silk, it is made by treating cotton with a mixture of nitric and sulphuric acids in a manner similar to the manufacture of gun cotton, but the nitration is not allowed to go so far. It is inflammable but not explosive, and dissolves in a mixture of alcohol and ether. The viscous solution is forced through fine openings in glass tubes; the solvent evaporates rapidly and leaves filaments, a number of which are taken to form a thread which is wound on a bobbin. The solvent is recovered for further use. The nitro-groups are removed by treatment with ammonium sulphide, leaving the original cotton cellulose in another form, much less inflammable, but lustrous and dye-able.

Cuprammonium silk is regenerated from a solution of cellulose, usually purified cotton, in a solution of copper hydrate dissolved in ammonia. The viscous blue cellulose-copper solution is formed into filaments as above and coagulated in a medium, such as caustic soda and glucose, and the threads are wound on glass reels, after which the copper is dissolved out by washing with acid.

Treating Pulp.

The viscose process, which is the result of extensive research by the well-known English cellulose technologists, Cross, Bevan and Beadle, is rather complicated, chemically; it involves treatment of bleached sulphite pulp with caustic soda and the alkali cellulose is oxidized, then treated with carbon bisulphide, which, when properly aged, gives a mass that can be forced through fine holes in a metal plate—Platinum is frequently used for this—into a coagulating medium. Here it forms filaments which are drawn out over a roller and spun into threads in a rapidly revolving circular box, where it builds up in a wall and is twisted somewhat. After winding on skeins, the sulphur is removed by treatment with sodium sulphide. Thus the original spruce fibre is regenerated in a more beautiful form, it is now a continuous filament or thread. By regulation of several factors, the fineness and brilliancy of the threads is controlled.

Acetate silk is made from either cotton or wood pulp, which is treated with acetic acid and forms an acetyl cellulose (or cellulose acetate) that is similar chemically to the nitro-cellulose of Chardonnet but is non-inflammable. Several degrees of acetylation are possible, with corresponding variations in the properties of the product. The acetyl cellulose is dissolved in acetone and the same compound is recovered as a filament by evaporating the acetone in warm air; the cellulose is not regenerated as in the other case. Wherefore, acetate silk cannot be dyed in the same manner as cotton, as is the case with the other three types. With Chardonnet, cuprammonium, and viscose silks, the regenerated cellulose behaves in a manner similar to cotton and can be

coloured with the same dyestuffs as are used for cotton.

An Enormous Industry.

During the war this cellulose acetate, as it is also called, was used as aeroplane "dope" for impregnating the canvas wing coverings and since then has been employed for textiles, and is being developed along other industrial lines.

The artificial silk industry is enormous and is growing with tremendous strides; the output of the principal British concern increased fifty per cent in the past year, the production to-day in the United States is said to exceed nine million pounds per year, while the world's output was forty-four million pounds in 1921. There are even six artificial silk factories in Japan, the home of the silk worm. The use of real silk has increased too, but only by about forty-four per cent, between 1914 and 1921, whereas the production of artificial silk increased almost seventy per cent. The natural product is still favoured for the very highest quality of goods, but rapid progress is being made in extending the application of the synthetic article, with the exploitation of the newer acetate silk only just in its infancy, a remark which applies, on the whole to the entire industry.

Viscose silk leads in quantity produced, but the acetate silk is more resistant to moisture, and is consequently stronger when wet.

In few fields do we see such extensive development of technique as in the knitting, weaving and dyeing of artificial silk, which, though its wearing qualities are somewhat inferior to the natural, is yet far more brilliant and lustrous. Fabrics of artificial silk are valuable rather for their beauty than their durability, being used for the most part in garments which are discarded with the changes in mode.

The Uses of Wood Silk.

The making of artificial silk has reduced the silk stocking from a luxury to a commonplace article of apparel. Likewise the neckties—and, we are told other things. It will be observed that most artificial silk fabrics are knitted, even some that have made the fashion, such as tricollette, and now we have the triumph of the weaver in a truly remarkable satin, with a wonderful sheen and in the most gorgeous colours.

But artificial silk is not always used alone; woven with other materials, as real silk, wool or cotton, it is used in making dress goods, such as sweaters, hosiery, underwear, neckties, satins, fancy shirtings and silks, etc. We read that the same equipment and raw materials necessary for the making of artificial silk thread serve for the production of imitation horsehair for hats and upholstering, and of ribbon straw for the braiding and millinery trades. Artificial leather or cloth, films and ribbons or thin transparent sheets are also now manufactured in many factories. The reader should examine the paper-like film enclosing the next box of chocolates he buys. Imitation Smyrna rugs, Gobelin tapestries, etc., all made from a nitro-cellulose silk, were exhibited at a recent fair.

Canada imports over two million dollars worth of cellulose silk thread and yarn, besides much more in the form of fabrics and manufactured articles. Some day a Canadian factory will do that business at home.

And the Tyres for this Car.

There were (in January), so the story ran, 72,540,000 rubber tyres in use, and a calculation of the yearly requirements of the world runs around 52,500,000 tyres, for which 300,000,000 tons of rubber would be required. If this is not an over-optimistic estimate, one wonders why demand, even with the world out of joint as it is, is so dragging, since our statistics discuss a total output of raw rubber for 1922 of 399,000 tons only, with about 100,000 tons *actual* stock on hand everywhere, leaving everything but tyres to live during the last year on the stock at the end of 1921 with some, but not too much, rubber left over for unseen contingencies.

Dr. Geer himself makes you wonder why, with such a demand, markets are so poor, as he said, when coming to the future: "I estimate that by 1928 the requirements of the rubber industry of the world will be somewhere in the neighbourhood of 480,000 to 550,000 tons of rubber, and this raises the query, "Are we going to get it?" for we shall then need more rubber than we ever needed before, and I am speaking now merely of the uses of rubber that we know of, and have entirely ignored any new uses that may come along."

Labour Banks in the United States.

"The first unorthodox activity of American trade unions which has fired the imagination of leaders and members and which has met in its early beginnings with quick and tangible success"—that is how the rise of labour banking in the United States is described by Leo Wolman of the New School of Social Research, in the *New Republic*.

Even five years ago, as Mr. Wolman points out, the rise of a movement of such magnitude and vigour in the near future could not have been foreseen. There were then some slight traces of activities akin to co-operative banking in which members of trade unions participated. But there was nothing to indicate that the American labour movement was any less concerned than in the past with wranglings over wages and hours and the limits of jurisdiction, nothing to show that it was on the eve of making a departure from its traditional concerns and about to extend its energies and interests to wider fields.

Yet, in three years, eighteen labour banks have been opened and two more are about to be added to the list. These banks are to be found all over the United States, and the organizers represent an increasing diversity —Machinists, Locomotive Engineers, Railway Brotherhoods, Amalgamated Clothing Workers, Central Labour Council, Ladies' Garment Workers. And so rapidly are still other banks being organized that the number is likely to be doubled in a comparatively short time.

Whatever the explanation of this phenomenon—Mr. Richard Boeckel in his book *Labour Money* attributes it to the realization by trade unionists that no great progress was to be achieved by collective bargaining, and that such progress could only be achieved by excursions into the fields of business and industrial control—nothing trade unions have done in the past has aroused such interest and enthusiasm. While the vigorous support given to the movement may be due to a clear vision of future business control, it seems likely, as Mr. Wolman is inclined to think, that the success of the first experiment in proving the labour bank useful to both labour organizations and their constituencies is the real cause of the rapid spread of the movement.

And this success is attributable to the fact that the labour bank satisfies needs not met by other banks. The most specific instance of this is the entry by the banks of the Amalgamated Clothing Workers into the business of remitting money to Russia after the banking authorities of New York had, on account of the losses incident on speculation in rouble exchange, forbidden banks to engage in this business. But many of the members of the Amalgamated Clothing Workers, like those of the other trade unions, are foreign born and have friends and families in Russia to whom they wish to send money. The Amalgamated Bank of New York began, less than a year ago, sending actual American dollars into Russia. Up to the present time, through this service nearly 90,000 persons have sent $2,200,000 to Russia.

And the case is typical. The clients of such banks regard these institutions as their own, and, as Mr. Wolman points out, can deal with them with a freedom and assurance that do not characterize their relations with other banks, for among the officers of the labour bank, which has a technical personnel like any other, there is at least one representative of the union, designated to see to it that the bank meets the requirements of its depositors.

The practical results so far as the individual members of the unions are concerned are an increase in savings accounts, and considerable evidence that labour banks contribute to increased ownership of homes among working men. The primary object of the labour bank, however, is the building up of resources, and its activities are likewise those of any other commercial or savings bank.

All this is very far from achieving business and financial control, and by this means giving labour's capital a new role to play. Even discrimination among various fields of investment for considerations other than safety or yield is narrowly restricted by the practical requirements of successful operation. "The business of investment banking," states Mr. Wolman, "has not yet been approached by labour organizations, and the functions of underwriting security issues, and of participating in corporate management are far from being assumed by either labour banks or the trade unions," although the Locomotive Engineers have recently organized an investment corporation, as yet but a small institution.

Nevertheless, in a country where the wage-earners' income may be assumed to reach such dimensions as $30,000,000,000 the future of labour finance may be looked upon with assurance. With a large proportion of the saving and capital accumulation in the United States due to wage-earners, a fair share of whom are members of labour organizations, the potentialities of labour banks are obviously enormous. In spite of the rapidity with which labour banks have multiplied, there are still vast numbers of working men who have not yet come to their own banks. But it seems inevitable that the labour bank movement will in time draw to itself its numerous resources. The labour bank is not primarily an American idea ; but labour's money is to be found more plentifully in the United States than anywhere else in the world. Nourished from this source, the labour bank is likely to grow on American soil, to dimensions which will make it a preponderant figure in the future.

Electric Light on Plant Growth.

Electric light will stimulate the growth of a variety of plants, according to the results of a six-weeks' test conducted by the Westinghouse Lamp Company, in co-operation with Peter Henderson & Company, Seedsmen at the Henderson Proving Grounds near New York. Many of the specimens subjected to electric light grew during the test more than twice the size of similar plants receiving daylight only, and were considered by experts to be from fourteen to twenty-seven days in advance of normal growth.

The tests indicate that electric light will be useful to florists and gardeners in bringing flowers to an early maturity for definite dates and in reducing the time required for seedlings to grow large enough to permit transplanting. "What this development means to the agriculturist is hard to predict" stated Samuel C. Hibben, National Secretary of the Illuminating Engineering Society and Manager of the Illuminating Bureau of the Westinghouse Lamp Company, under whose directions these investigations have been conducted. "It seems, however," he continued, "to promise a means of doubling the speed of development of many species, and bids fair to enable the hoticulturist to bring his flowers into bloom at the time when their market is at its best. This has all been possible by the perfection of flexible and cheap sources of light."

The tests were started on the first of this year, when twelve varieties of vegetables and twelve of flowers were sown in shallow boxes. The soil sted was an ordinary light sandy soil such as is generally used for starting seedlings. Two sets of boxes were sown, one for growing under the electric light and for growing with only daylight. The vegetable seeds selected for the experiment were : Snowball Cauliflower, Easy Blanching Celery, Tendergreen Bean, Bush Lima Bean, French Forcing Carrot, Davies Perfect Cucumber, Butternut Lettuce, Scarlet Giant Radish, Egyptian Beet, Rocky Musk Melon, Bunny Beat Tomato, and Golder Heart Endive. The flower seeds selected were : Transvaal Daisy, Orange Calendula, Blue Lace Flower, Baby's Breath, Snap Dragon, Lavender African Daisy, Impatiens, Mignonette, Wallflower, Cincerari, Begonia, and Aster.

The tests were grown on opposite benches under identical conditions of heat and moisture with the exception that one group received no light other than that provided by nature. When the electric light was turned on, an oil cloth curtain divided the one group from the other. The light was switched on every night from eight o'clock until one, when it was automatically shut off.

According to J. A. Feisler, of Peter Henderson and Company, there was a marked difference noted in the germination of the seedlings under the electric light almost from the outset. Germination was hastened in some cases to the extent of four to twelve days, which advantage was maintained in every case throughout the six weeks of the experiment.

In this experiment the fact was established that all plants presenting a large leaf surface are greatly stimulated by the additional electric light, as in the case of such leaf crops as lettuce and endive. Tests preliminary to these by the Westinghouse Lamp Company at Columbia University showed favourable results with such plants as Boston fern, Calla lilies, and rose geraniums.

Education in Russia.

The report made by Mr. Lunarcharsky, Commissary for Education, to the Tenth Soviet Congress, is of especial interest as this is the first time since its establishment that the Commissariat has issued a detailed report upon its work.

Mr. Lunarcharsky said that the maximum programme for public education was as follows: The "Single School," a system of pre-school establishments, compulsory free education, free meals, clothes, boots and primers for those needing them, political instruction, propaganda work of all kinds, adult classes, schools for illiterates and, finally, the system of party schools and the educational work of the trade unions, including primary, secondary and higher technical education. This could not all be achieved under present conditions but it was the general plan, though it might be necessary to make certain sacrifices as the whole of educational policy was governed by the very complex of new economic policy.

According to the Central Statistical Department, there were in 1921, 82,397 primary schools in Russia with 6,860,000 pupils. In 1911 there were 63,000 schools with 4 million pupils. The rapid growth in the number of schools might be judged from the fact that whereas from 1894 to 1911 the number increased by 1,600 schools yearly, during the revolutionary period it increased by 1,916 schools (and 282,000 pupils) yearly, which was far more than at any other period in Russian History. In 1920 and 1921, 75 per cent of all children in Russia between 8 and 11 were at school. Well over 200,000 children were being taught in KINDER-GARTENS. The only source of income was the State revenue derived from grain levies and paper money issues. Schools were opened without any questions being asked nor were plans ever abandoned because means were lacking.

When the policy of the State supply programme was introduced the educational budget was cut down. The number of teachers was greatly reduced and the Commissariat for Education retained some 50 per cent (about 90,000). All schools, pre-school establishments and children's homes with their staffs, were transferred from the change of the central to that of the district authorities. The result of this was that the local authorities began to diminish the number of schools and children's homes and by April 1922 there were, in all, only 68,000 schools with 5.3 million pupils. By October this number had fallen to 55,000 schools with 4.75 million pupils. At present there were far fewer schools than in 1914 though the number of pupils were still rather more than in that year.

In 1920 the number of children of school age (or not exceeding 11 years) attending school was 71 per cent in April 1922, 44 per cent and at present time 38 per cent of the total. Thus, the idea that every Russian child should have its place in school had been departed from very considerably. If it was desired to bring Russian schools up to a number which would assure the education of half the children in the country, 75,000 schools, accommodating 6 million pupils, would be needed, that is to say, 20,000 new schools would have to be opened.

In the matter of pre-school establishments conditions were even worse. There were at one time 207,000 children in these establishments but by April 1922 this figure had sunk to 86,000 and it was now less than half that. Thus the work accomplished with such pride and which had, in many cases, been the admiration of foreign pedagogues had perished.

In the children's homes there were more than 600,000 children. Of these, 320,000 had been taken over by the central authorities and 280,000 had to be provided for from local resources. The central funds were quite inadequate while from the provinces reports were continually received that rations were not distributed or were insufficient. In the children's homes the death rate was extraordinarily high. Attempts to increase the revenues of children's homes from local sources were unavailing. Yet it was essential that these children, who were State orphans, should be cared for. Every means was being tried to reduce the numbers, and children with relatives of any sort were returned to them.

The conditions under which teachers lived were described as appalling and the fact that they forsook their posts should surprise no one. Though the qualifications for a school teacher were higher than those required from any other class of worker, the percentage

of the minimum living wage received by them was less than that received by any other class. The figures for various groups of workers were as follows :—

Category	Percentage of minimum living wage received.
Wood workers	81
Builders	76
Textile workers	68
Sugar workers	66
Communal workers ..	55
Chemical workers	47
Metal workers	46
Sanitary workers ..	33
Transport workers ..	24
Teachers	12

Such a state of affairs should not be tolerated.

Before the war 238 million roubles from central funds and 76 million roubles from local funds were devoted to education ; at the present time the total amount spent was equivalent to 36 million gold roubles or about a tenth of what the schools received before the war.

Discussing the question of the reintroduction of the payment of school fees Mr. Lunarcharsky said that the most striking argument in favour of the system was that 31 Provincial Government Executive Committees had introduced it upon a basis varying from 20 to 70 per cent of exemption according to capacity to pay.

Information received from the Ukraine showed that in certain Governments 70 to 80 per cent of all the schools were maintained by the local peasantry. In the Government of Novgorod 408 contracts between the Commissariat for Education and the peasants for the maintenance of schools had been concluded, in Novo-Nikolaevsk 257, in Tula 513, in Ribinsk 40, in Viatka 341, in the Don provinces 150, in Perm 321, while in Simbirsk 70 per cent of all the schools, and in Vitebsk 60 per cent had concluded contracts.

In the main teachers supported wholeheartedly the Soviet Single school, though their support had been weakened by famine conditions.

A number of higher educational establishments had been opened in the first flush of revolutionary enthusiasm but most of them had to be closed. Altogether 49 were closed and 24 amalgamated with others. There were now 91 such establishments in Russia and it was being considered whether the number should not be reduced still further on account of the terrible condition of both teachers and pupils.

The figures for factory schools, though not very recent, showed that there were 500 schools for this type in Russia with 34,000 teachers and it was hoped that 50 per cent of all the young workers in the factories would soon be enrolled in these schools. On 1st October there were 927 technical courses for workers with 52,000 students. The number had since fallen to 246 courses with 14,000 students and the Congress was urged to take measures to raise the number of courses to the 1920 level.

In 1921 there were 170,000 schools for illiterates while at the present time there were only 13,000. During the first year 4,800,000 persons passed through these schools. There were formerly 28,000 village reading rooms, the present number was rather more than 3,000 and even the number of libraries had fallen from 14,800 to 3,600.

The Commissary for Education concluded with a very urgent appeal to the Congress to impress upon the Council of the people's Commissaries and the local authorities the need for further effort on behalf of education.

Resolutions of the Congress.

A Committee of 33 members having been appointed to examine the report of the Commissary for Education, certain resolutions were adopted of which the following are the most important :—

That in view of the critical financial position of the country the payment of school fees should be allowed as a temporary measure in schools of the first and second categories and in the higher educational establishments. These fees should be so graduated as to fall principally upon those able to afford them while they should be reduced or waived for indigent persons and for disabled ex-service men.

That no kind of private schools be permitted and that all schools be maintained by the State.

That every effort be made to encourage the conclusion of contracts between Educational Departments and the village authorities for the maintenance of old schools and for the opening of the new ones.

That the Congress has observed with satisfaction the success achieved by the Commissariat for Education in enrolling workers and peasants in the higher educational establishments.

That the Congress will hold the Provincial

Government Executive Committees responsible for the maintenance of the technical and trade schools as these should provide the Soviet Republic with the skilled workers so essential to its development.

That, taking into consideration the growth of factory schools, which are the only schools devoted exclusively to young industrial workers, the Congress is of opinion that the number of these factory schools should be increased untill sufficient to provide for the needs of the whole of the working classes.

The War Against Waste.

Employers of labour would, says a "Times" Correspondent, do well to give some attention to the very important developments now taking place in sanitary engineering.

These developments promise, in some instances at least, to make the conditions of life of the workers better and to afford them various comforts and even necessities at much reduced cost—a matter of supreme importance to industry.

Gas from Sludge.

Gas, as is well known, is generated in large quantities by the spontaneous decomposition of "sludge". Thus the sewage works at Exeter were lighted for many years with the gas from the septic tank. The Leper Hospital near Bombay pumps its sewage, lights its buildings, and cooks its food by gas derived from the same source.

The gas comes from the decomposition of cellulose by bacteria. The types of gas are shown in the following table given by Mr. Martin :—

	Exeter.	Manchester	Worcester, Mass.
	%	%	%
Carbonic Acid ..	3.5	6.0	5.9
Methane ..	40.1	73.0	75.2
Hydrogen ..	6.2	5.0	0.3
Nitrogen ..	42.2	16.0	17.4
Oxygen ..	8.0	—	1.4

At Manchester, Professor Fowler obtained 1 cu. ft. of gas per 100 gallons of sewage. Birmingham obtains 320,000,000 cu. ft. of gas annually from 9,000 tons which are gasified. The calorific value of the gas is stated to be 650 to 700 B.Th.U. per cu. ft.

The Gas Light and Coke Company of London sells gas of 500 B.Th.U. at 9.2d. per therm, of 3s. 10d. per 1,000 cu. ft. On this basis the Birmingham gas is worth, probably, about £80,000.

Communal Hot Water.

Mr. Martin, in discussing the uses to be made of this gas, said that authorities with housing schemes in being might well consider the question of a supply of communal hot water. He added, however :—

"But even with a fuel which costs nothing it is questionable whether it would ever pay to heat water at a central station and distribute it to a large area over which houses are dotted at ten or twelve to the acre."

This question, of course, is crucial. Mr. Martin quoted Dr. Herzfeld to the effect that the average daily consumption of hot water by a family of five, with servants, in a house rented at £140 per annum, is eighty gallons at 140deg. F. This works out at about ten gallons per head per day. A geyser to heat the water gives about 75 per cent efficiency.

Thus a household of eight would need 88 cu. ft. of gas per day. In other words, a town of fifty thousand inhabitants could obtain for nothing enough gas from sludge to supply hot water to 570 houses, or perhaps to 4,560 people.

Whether or not this is worth doing remains to be seen. But of the value of the hot water, when obtained, there can be no doubt. A worker's dwelling supplied with a rapid and easy way of producing hot water at small cost is a home the comfort of which is out of all proportion to that of a home not so supplied. And, as has now been abundently proved, comfort and industrial peace are practically names for the same thing.

Where the groups of houses encircle one large factory utilization of sludge for gas and hot water production is certainly well worth consideration. In such a scheme the employer might, to his advantage, co-operate with the local authority.

Gain to Industry.

There is still, in every community, a vast amount of waste the cost of which, in the last issue, is borne by industry. It is industry, for example, which pays for smoke waste, for fogs, for discomfort, for bad ventilation, and for unthrifty methods of sewage disposal.

For all these ultimately fall either on the rates or on the individual worker, whose efficiency is damaged. Thus the cost of production is raised.

Indian Mineral Production in 1922.

The Report on the Mineral Production of India during 1922, by Mr. E. H. Pascoe, M.A., Sc. D.,(Cantab.), D.Sc. (Lond.),F.G.S., F.A.S.B., Director, Geological Survey of India, is an interesting one from many points of view. Its main features may be set down under the appropriate heads adopted by it.

Mineral Concessions Granted.—The number of mineral concessions granted during the year amounted to 672 as against 651 in the preceding year; of these 562 were prospecting licenses, and 110 were mining leases.

Chromite.—There was a decrease in the production of chromite from 34,762 tons in 1921 to 22,777 tons in the year under review. Beluchistan is mainly responsible for this decrease.

Coal.—There was a decrease during the year of nearly 292,000 tons, or somewhat over 1.5 per cent, in the output* of coal. This decrease was due largely to Bihar and Orissa. Central India and the Central Provinces also showed substantial reductions, and Rajaputana a drop of over 60 per cent. Bengal and Assam both show considerable increases. The decrease shown by Bihar and Orissa was due chiefly to the Giridih field, that in Central India to Umaria and that in the Central Provinces mainly to the Ballarpur field. In Hyderabad State the Singareni field again showed a decrease amounting to nearly 42,000 tons, while the Sasti coalfield opposite to Ballarpur in British territory yielded a little over 4,000 tons short of its maiden effort in 1921 of some 42,600 tons. There was a general increase in the pit's mouth value of coal, except in Beluchistan and Rajaputana, the rate of increase varying from as little as Re. 0—0—2 in the Punjab to Rs. 4–8–6 in Burma; the increase in the fields of Bihar and Orissa averaged Re. 0—8—7 and in Bengal Re. 1—14—5. During the previous year, the existence was proved in the Talcher coalfield of considerable quantities of good steam coal, and this field is now in course of commercial development.

The total production in 1921, although an improvement on that of 1920, was nevertheless nearly 3 million tons below the output of 1919, and the coal situation became so acute that it was found necessary early in 1921 to prohibit the export of Indian coal to foreign ports. The effects of this step are seen in the export statistics, which show a fall from a total of nearly 1¼ million tons in 1920 to 275,000 tons in 1921, and to a mere 77,000 tons in the year under review. On the other hand, the imports rose from the insignificant of figure under 40,000 tons in 1920 to over 1 million tons in 1921, and to nearly 1¼ million tons in 1922, 718,000 tons coming from the United Kingdom, 389,000 from South Africa, 56,000 from Japan, and the balance from Australia, New Zealand and other countries.

Copper.—The output of copper-ore in Singhbhum has been maintained at a fairly steady level since 1919, following the commencement of smelting operations at the Rakha Mines during the year 1918. The output in 1919 was 32,756 tons, which fell in 1920 to 28,167 tons, valued at £42,250, and again in 1921 to 23,089 tons, valued at £42,560. The output during 1922 rose to 30,764 tons, valued at £20,509. The Rakha Mines deposit is a low grade sulphide-ore containing from 2 to 4 per cent of copper, but a slightly improved grade of ore has recently been struck. Three other companies are prospecting in the Singhbhum belt; and in one place a 10-12 per cent ore has been obtained. Smelting operations by the Cape Copper Company, commenced during the year 1918, resulted in the production of 980¼ tons of refined copper in the year 1919, 512 tons in 1920, 1,143 tons in 1921 and 1,037 tons in 1922. There was a small production of 40 tons of copper-ore in Mysore State as against 30 tons in the preceding year.

Diamonds.—The output of diamonds from Central India amounted to 171.39 carats, valued at Rs. 91,648 (£6,110), as against 126.1 carats, valued at Rs. 72,970 (£4,865), in the preceding year.

Gold.—The continuous decrease in the output of gold in India from the maximum production of 616,728 ozs. reached in 1915, was interrupted during the year 1922, when the total output of gold was 438,015.04 ozs., valued at £1,857,565, as compared with an output of 433,722.59 ozs., valued at £2,050,576 in the previous year. This increase was due almost entirely to yields from cyanide slags in Mysore.

* The total production of coal during the year 1922 amounted to 19,010,986 tons as compared with 19,302,947 tons in the preceding year.

Graphite.—No output of graphite was recorded in 1922 from the mines which were in operation in the previous year and which yielded some 25 tons. Mysore only reported a small output of 20 tons.

Iron.—There was a considerable decrease in the output of iron-ore amounting to over 33½ per cent, *viz.*, from 942,084 tons, valued at Rs. 21,08,329 (£140,555), to 625,274 tons, valued at Rs. 15,66,430 (£104,428). This decreased production is more apparent than real and is attributable to the fact that owing to the incompletion of railway sidings in the Mayurbhanj State in 1921, the Tata Iron and Steel Company were unable to despatch more than about four-fifths of their raisings, the rest being dumped in the stock pile ; although the raisings for 1922 total only 378,134 tons, the total ore despatched from Mayurbhanj was 393,409 tons. The production in Singhbhum is mostly that of the Bengal Iron Company, the Indian Iron and Steel Comapnay being responsible for 22,947 tons from their quarrying at Gua ; in 1921 the latter Company's share of the raisings in Singhbhum was as much as 102,723 tons.

The Tata Iron and Steel Company produced 227,683 tons of pig iron, 111,500 tons of steel, including rails, and 1,810 tons of ferro-manganese, showing a decrease in each case over the previous year, while the Bengal Iron Company produced 110,744 tons of pig iron and 28,186 tons of cast iron castings, showing increases in both cases. The Indian Iron and Steel Company commenced turning out pig iron, railway sleepers and railway "chairs" in November, 1922. In the Central Provinces the number of indigenous furnaces in operation fell from 155 in 1921 to 148 in 1922, the decrease being mainly in the Drug district and mostly due to the *aghoria lohar* either having left the villages or taken to other occupations.

The output in Burma is by the Burma Corporation, Ltd., and is used as a flux in lead-smelting.

Jadeite.—The output of jadeite in Burma was more than doubled in the year under consideration, rising from 3,815 cwts., valued at Rs. 7,01,673 (£46,778), in 1921 to 7,724.7 cwts., valued at Rs. 8,69,340 (£57,956), in 1922. The export figures, from which a better idea of the extent of the jadeite industry is obtainable for the year 1921-22 were 5,374 cwts., valued at Rs. 18,98,030 (£126,535), rising to 7,805 cwts., valued at Rs. 24,86,969 (£165,798), in 1922-23.

Lead.—The production of lead-ore at the Bawdwin Mines showed a further increase of some 28,000 tons, and the total amount of metal extracted increased from 33,717 tons, valued at Rs. 1,17,46,967 (£783,131), to 39,214 tons, valued at Rs. 1,41,71,392 (£944,759). The quantity of silver extracted rose from 3,555,021 ozs. valued at Rs. 88,20,855 (£588,057) to 4,205,584 ozs. valued at Rs. 1,00,39,362 (£588,057), to 4,205,584 ozs. valued at Rs. 1,00,39,362 (£669,291). The value of the lead extracted increased from Rs. 348 (£23.2) per ton in 1921 to Rs. 361 (£24.1) per ton in the year under review, and that of silver decreased from Rs. 2—7—8 (39.7*d.*) to Rs. 2—6—2 (38.2*d.*) per oz.

The increase in production of lead-ore at the Bawdwin Mines recorded in 1921 was repeated in 1922 to the extent of some 28,00 tons.

Magnesite.—The check on the revival of the Indian magnesite industry recorded in 1920 disappeared during 1921, when the output increased by nearly 6,000 tons, reaching the highest figure that has yet been recorded, namely, 20,000 tons. This record was nearly maintained during 1922, the figure being well over 19,000.

Manganese.—During 1922 the output of manganese-ore in India fell from 679,286 tons, valued at £1,537,068 f.o.b. at Indian ports, in the previous year to 474,401 tons, valued at £915,093 f.o.b. Indian ports. The Central Provinces was responsible for the greater part of this decrease, which is attributable to the small demand for ore in the early part of the year, and to a good harvest which absorbed most of the labour. The exports during the year were about 400,000 tons more than the production, and evidently included the accumulated stocks of previous years.

The figures of distribution of the exported ore according to destination show that this increase in exports was due chiefly to the enormous increase of over 150,000 tons in the quantity of ore taken by the United Kingdom, and denote a recovery from the disastrous reduction in steel-smelting resulting from the coal strike of 1920 and high labour charges. With the exception, however, of the United States, Japan and Germany, all other importers of Indian manganese-ore received substantially larger supplies than during the previous year, France doubling her previous quantity. The United States imports from India dropped over 70 per cent. The large exports to Belgium are in part for transmission to Germany.

Mica.—There was a decrease of about 1,000 cwts. in the declared output* of mica in 1922 from that of the previous year. As has been frequently pointed out, the output figures are incomplete, and a better idea of the size of the industry is obtained from the export figures. The exports actually show an increase of over 12,000 cwts., rising from 30,944 cwts., valued at Rs. 63,94,113 (£426,274) in 1921, to 43,145 cwts., valued at Rs.57,85,245(£385,683) in 1922, corresponding to a fall in the average price per cwt. from Rs. 206.6 (£13.8) to Rs. 134.1 (£8.9).

Monazite.—There was a further and larger decrease in the output of monazite in Travancore, which fell from 1,260 tons, valued at £30,959 in the previous year to 125 tons valued at £1,871, in 1922.

Petroleum.—In the review for the year 1920 it was necessary to record a decrease of 12½ million gallons in the output of petroleum from the production of 305,749,138 gallons recorded for the year 1919. In the year 1921 the total production almost equalled that of 1919, amounting to 305,683,227 gallons, important increases being recorded for the Singu and Yenangyaung fields; 1922, however, shows a decrease in output of over 7 million gallons, the total production being 298½ million gallons against the 305½ million gallons of 1921.

The Yenangyat field is rapidly dying; parts of it are already regarded as dead. The Singu and Yenangyaung oilfields show decided decrease where the outputs fell by 12 million gallons and 4½ million gallons, respectively. A portion of the decrease in those two fields was balanced by the increased output in Thayetmyo, which rose from 66,000 gallons to 2½ million gallons. The remaining decrease in the Burma oilfields was to a great extent balanced by the enormous increse in the Attock oilfields from a nominal figure of 59,000 gallons in 1921 to 7⅓ million gallons in the year under review. The Assam oilfields maintained their output of the previous year. An attempt is now being made to utilize the shallow oil-sands of the Yenangyaung field which were shut off during the competitive rush for the richer deep sands; several remunerative wells are now being worked at depths a little above or below 400 feet. Another feature of this field is the electrification of the pumping plant which has now been applied to a large number of wells.

During the year, active prospecting was continued in the Punjab, Assam, and Burma, by a variety of oil interests.

In the Punjab the oil industry entered on a new phase with the completion at Rawalpindi, and the opening in February 1922, of the refinery erected by the Indo-Burma Petroleum Co. to deal with the production of the Khaur oilfield in the Attock district. The refinery has a daily capacity of 65,000 gallons of crude oil, but the throughput was considerably less than this during the year. The test wells in the Dhulian and Gabir areas reached the depths of 2,551 feet and 1,646 feet, respectively, without striking oil in remunerative quantity; drilling in both areas is proceeding. During the year, there was a considerable increase in the imports of the kerosene oil, amounting to 11 million gallons, the increase being mostly in the imports from the United States of America, which exceeded the imports of the previous year by some 8½ million gallons. Out of the 2,560,139 gallons of kerosene oil shown against "other countries," about 2¼ million gallons came from Egypt.

During the year under review the export* of paraffin wax decreased by 3,422 tons.

Ruby, Sapphire and Spinel.—There was almost the same proportionate increase in the output of the ruby mines in 1922 as that recorded in the year 1921. The total production amounted to 231,160 carats, valued at Rs. 7,27,312 (£48,487), as against 193,915 carats, valued at Rs. 7,52,459 (£50,164) in 1921. It will be seen that, although the output increased, the total value decreased considerably. This is due to the decrease in the output of rubies which are more valuable than sapphires and spinels; the outputs of the latter increased as much as to exceed the total figure of 1921 by over 37,000 carats.

Salt.—There was an increase of 120,000 tons in the production† of salt in 1922 over that of the preceding year. The production of Northern India increased by 126,000 tons, the decreases in Burma, Bombay and Sindh being almost balanced by the increases in Aden and Madras. There was also an increase in the production of rock-salt from 148,038 tons in 1921 to 207,312 tons in 1922. The imports of salt slightly increased from 479,306 tons

* The declared output of mica in 1922 was 31,570.1 cwts., as compared with 32,488 cwts. in the preceding year.

* 27,636 tons of paraffin wax were exported from India in 1922.

† The total production of salt in India during 1922 was 1,653,898.2 tons, as compared with 1,533,679 tons in the preceding year.

in 1921 to 507,073 tons in the year under review.

Saltpetre.—In the total output of saltpetre, there was a decrease of over 4,000 tons in which all the provinces except the Punjab shared. The production of Bihar and the United Provinces decreased by 46 per cent and 39 per cent, respectively, while the Punjab showed an increase of 16 per cent. The total Indian production amounted to 11,672.9 tons, valued at Rs. 35,22,995 (£234,866), against 15,893.7 tons, valued at Rs. 53,55,478 (£357,032) in 1921. Exports decreased from about 13,000 tons in 1921 to 11,000 tons in the year under review, the decreases being shared by all the countries where exported, except Ceylon which alone showed a considerable increase.

Silver.—There was a further increase in the output of silver from Bawdwin, which amounted to 4,205,584 ozs. against 3,555,021 ozs. in 1921. The production from the Kolar Gold Mines also increased. There was a slight decrease in the output from the Anantapur Gold Mines in Madras. The total Indian production was 4,244,043 ozs. valued at Rs. 1,01,28,504 (£675,234).

Tin-Ore.—There was a slight increase in the production of tin-ore amounting to 1,874.7 tons against 1,701.6 tons in 1921. The whole of the production was derived from Burma, Tavoy contributing 77 per cent of the output and Mergui 22 per cent. Mergui also produced 217.8 tons of black tin, showing a moderate increase over the figure for the previous year. The imports of unwrought tin decreased considerably from 53,114 cwts. in 1921 to 34,459 cwts. in 1922; 88 per cent of these imports came from the Straits Settlements.

Tungsten.—The production of wolfram increased slightly from 898.3 tons, valued at Rs. 4,39,388 (£29,292) during the previous year to 943 tons, valued at Rs. 3,75,532(£25,035), in 1922. The increase in output was, however, accompanied by a decrease in total value, amounting to £4,257. The whole of the output with the exception of only 5 tons was derived from the Tavoy district. Recent experiments have found a use for tungsten carbide as a substitute for the "bort" used in the crowns of coredrills. The carbide is said to have a hardness very little inferior to "bort" and to be cheaper. As the price of "bort" is between £10 and £12 a carat, the substitution of tungsten carbide may add a much needed impetus to the wolfram-mining industry.

Zinc.—18,061 tons of zinc-ore were exported to Belgium during the year 1922 against 4,000 tons in the preceding year. The ore is found in association with galena in the Bawdwin Mines leased by the Burma Corporation, Limited.

Alum.—The production of alum rose from 3,380 cwts., valued at Rs. 64,400 (£4,293), in 1921 to 6,632 cwts., valued at Rs. 99,760(£6,651) in the year under review. The whole output came from the Mianwali district in the Punjab.

Amber.—The production of amber amounted to only 3.6 cwts., valued at Rs. 1,960 (£131), in 1922, as against 26.3 cwts., valued at Rs. 16,840 (£1,123), in the preceding year.

Asbestos.—Of the total production of 242 tons of asbestos, 228 tons came from the Hassan district in Mysore State, and the balance, 14 tons from the district of Bhandara in the Central Provinces. The total value of the output was Rs. 10,520 (£701), consisting of 14 tons valued at Rs. 1,400 (£93) and 228 tons valued at Rs. 9,120 (£608).

Barytes.—2,392.2 tons of barytes, valued at Rs. 48,000 (£3,200), were produced in 1922, against 1,691 tons, valued at Rs. 52,283 (£3,486), in 1921. 1,742.2 tons were reported from the Karnool district of the Madras Presidency, and 650 tons from the Alwar State, Rajaputana.

Bauxite.—The output of bauxite in the Jubbulpore district, rose from 1,999 tons, valued at Rs. 9651(£643), in 1921, to 3,987 tons, valued at Rs. 15,948 (£1,063) in the year under review. The mines at Kaira in Bombay, from which an output of 4,653 tons was reported in 1921, were not worked during the year 1922. Messrs. Dalchand Bahadur Singh of Calcutta, who were granted a prospecting license for bauxite in the Savantwadi State within the Bombay Presidency, obtained 932 tons of bauxite in the course of prospecting operations in 1922.

Building Materials and Road-Metal.—The total estimated value of building stone and road-metal produced in the year under review was Rs. 59,22,498 (£394,833).

Clay.—The recorded production of clay fell from 199,266 tons, valued at Rs. 5,60,664 (£37,378), in 1921, to 104,748 tons, valued at Rs. 2,73,272 (£18,218), in 1922.

Fuller's Earth.—There was a considerable rise in the production of Fuller's Earth amounting to 13,539 tons, valued at Rs. 36,664 (£2,444), against 2,807 tons, valued at Rs. 14,490 (£966), in 1921.

Gypsum.—There was an increase of about 7,000 tons in the production of gypsum over

that of 1921. The total production in 1922 amounted to 40,645.5 tons, valued at Rs. 64,479 (£4,298), against 33,801 tons, valued at Rs. 34,018 (£2,267), in the preceding year.

Ilmenite.—There was an output of 400 tons of ilmenite, valued at £1,200, at Muttam in the Travancore State, Madras Presidency.

Ochre.—The total production of ochre in 1922 amounted to 6,702 tons, valued at Rs. 57,180 (£3,812), against 5,812.7 tons,* valued at Rs. 32,606 (£2,174).

Soda.—Twenty-eight tons of soda, valued at Rs. 1,021 (£68) were produced in the Ladak tahsil, Kashmir, in 1922, against 10 tons, valued at Rs. 360 (£24), in 1921.

Steatite.—The production of steatite fell from 2,070 tons, valuedat Rs. 61,782 (£4,119), in 1921, to 906 tons, valued at Rs.36,395 (£2,426) in 1922.

Zircon.—160 tons of zircon, valued at £1,280, were extracted from the Muttam Mine in the Travancore State, Madras Presidency in 1922.

* Excluding (a) ochre (weight not reported), valued at Rs. 1,014, from Kothi, and 2,000 tons of ochre (value not reported) from Bundelkhand; and (b) 60 tons of ochre (value not reported) from Chanda.

Education in Bombay.

Reviewing the director of public instructions report of the progress of education in the Bombay Presidency during the quinquennium ending 1921-22, the Government of Bombay observe that as a matter of financial policy they have decided not to earmark any head of income for educational purposes, and the balance of grants has been merged in provincial revenues, unlike in the pre-reform era, when the Imperial Government who have now ceased to earmark grants from central revenues, were assigning special grants. The result of the present arrangement, however, was that the Minister was no longer subject to the detailed control of the Government of India. Notwithstanding the changes, education had been fairly treated, and not only had the diminished value of the rupee been compensated but also considerable expansion and improvement had been effected at great cost. The expenditure for education from provincial funds alone rose from Rs. 75,51,000 in 1916-17 to Rs. 1,69,88,000 in 1921-22, while secondary education and higher education had not been neglected, though no advance had been made. The chief development had been in regard to primary education which had caused a new political awakening among the backward classes. In the matter of free and compulsory primary education, the Government decided to help the municipalities and local boards in the proportion of half and two-thirds respectively of their total expenditure.

The Government condemn in emphatic terms the message of non-co-operation in schools and colleges, the baneful effects of which propaganda could not be realized before many generations. Dealing with the statistical results of the report the Government of Bombay point out that the steady increase of numbers of educational institutions has been satisfactory. The total number receiving instruction rose from 7,81,684 to 9,58,382. The total annual expenditure rose from Rs. 1,64,36,000 to Rs. 2,96,03,000, a rise of 80 per cent. Of the expenditure, Provincial and Imperial funds in the first year under review provided Rs. 79,19,000 or 40 per cent, while in the last year the Provincial funds provided Rs. 1,69,88,000, the Imperial grants having been merged in provincial revenues. Other items treated in the report refer to medical and fine arts education.

A Correspondent writes :—Mr. S. N. Mukherji, A.S.A.A., Incorporated Accountant from London who recently took up the appointment of the Dean of the Faculty of Commerce of the Lucknow University, is giving up that high appointment to devote himself to a directly commercial career. We appreciate the fine spirit of sacrifice and enterprise which has led Mr. Mukherji to leave a life of compartively greater ease and leisure for that of a struggle, worry and hard work. Though a commercial expert he has shown an idealism which alone can make the Industrial and Commercial careers successful in India at the present day. Mr. Mukherji is joining as a partner of the well-known firm of Incorporated Accountants, Messrs. S. K. Day & Co. in Calcutta. We have no doubt that the accession of a man of Mr. Mukherji's qualifications and experience to the firm will greatly add to its strength. The loss to the Lucknow University by his retirement will be a gain to the world of Commerce.

The Industrial Development of India.

No economic movement in recent years has been more striking than the rapid growth of industry in India since 1914. Sir Rajendranath Mookerjee, K.C.I.E., reviews the position in an article on "The Present Economic Condition of India," in the *Asiatic Review*, in which he says:—The Great War brought about results within a few years which otherwise would have needed a generation to fructify. Drastic changes in the economic and financial outlook of India became necessary as a direct corollary of world-events over which India had no control. The cessation of hostilities found India ready for a great industrial push, for which intensive preparations had been made during the years of struggle and necessity. Relieved from war's burdens, the need for careful discrimination seemed to disappear. India plunged blindly into the vortex of company promotion on a scale that no one dared to dream of in pre-war years. Over-speculation and over-trading in 1919 brought about the usual Nemesis. Chaotic conditions in Europe, combined with an acute failure of the monsoon in 1920, brought about a reaction, from the effects of which India is still struggling. No stable country shows in her international trade such violent fluctuations as India has done during the post-war years. A favourable balance of trade of Rs. 119 crores to India's credit for the year 1919-20 was converted into an adverse balance of Rs. 78 crores in 1920-21. The fall in the exchange rate from 2*s.* 10½*d.* to 1*s.* 5*d.* within the course of a few months in 1920 was the inevitable result of the violent fluctuation in her foreign trade. The failure of wages to equal the rise in cost of living produced, for the first time in the history of Indian industries, labour troubles on a considerable scale. Political incidents complicated the economic position. The reaction produced a complete stagnation in business within the country. Signs are forthcoming, however, that the corner has been turned. The year 1922-23 shows once more a favourable balance of trade amounting to Rs. 90 crores, though this was reduced to Rs. 28 crores by very heavy imports of gold (41 crores) and silver (18 crores). Unemployment and distress, however, remain acute, for confidence is shy of growth. The deep slough of depression appears to have passed, but careful reconnaissance is needed for complete emergence. The real post-war adjustment is perhaps now in progress. Although the highly satisfactory settlement with Turkey and the Far East will tend to hasten its movement, the difficult and almost chaotic conditions on the European Continent may seriously retard it. India cannot get away from the influence of world factors, and must try to understand and appreciate her position in the economy of the commercial world and throw her weight in favour of a speedy reversion to normal conditions of harmony and goodwill.

India is predominantly an agricultural country. About 70 per cent of her population derive their livelihood from land; 260 million acres out of a total area of 960 million acres are under crops. Advocates of Indian industrialization have often failed to grasp the fundamental fact of the economics of India that for generations to come agriculture will remain the chief occupation of her people. I do not mean to suggest that there is any conflict between agricultural and industrial development. For I consider agriculture to be the basic industry of a nation, and, as such, embraced within the sphere of industrialization. The ideal is to secure the fullest possible use of the land for the production of food and raw materials by means of an ever-diminishing proportion of human labour. The method is the application of scientific research to agriculture.

Agriculture in India is still of an archaic type; primitive and crude appliances are used where more modern types could multiply the yield of the land; the ignorance of the cultivator combines with the rigidity of custom to prevent the rapid introduction of newer methods. Of recent years, however, partly as a result of competition in marketing, partly of the praiseworthy propaganda of the Government Agricultural Departments, and, in part as an indirect effect of the widened basis of occupation arising from the opening up of manufacturing industries, and also to a general diffusion of knowledge concerning the outside world, the methods of Indian agriculture are being gradually adapted to modern conditions. Increased means of communication—roads, railways, and canals—have brought the farmer nearer the towns and markets, and increased his knowledge of the outer world. A tendency toward specialization of crops is distinctly observable. The Government Departments

have directed particular attention to this feature. Land which has been found peculiarly adapted for the growth of cotton is now reserved for that purpose. The result is a bigger yield per acre and improved strains. It has been found possible to grow the longer American staple in the Punjab. The average yield per acre is still very poor, being between 75 and 100 lbs. only, as compared with 180 lbs. in U. S. A. and 360—400 lbs. in Egypt. With the formation of a Central Cotton Committee, to act as the connecting link between agricultural departments and the cotton trade, it may be expected that an impetus will be given to the improvement of cotton production in India. The question is of imperial interest, for India is the second largest producer of raw cotton in the world, America being by far the biggest producer.

The effect of war on agriculture was slight, except where (as in the Punjab) the agricultural villages formed the chief recruiting centres for the Army. The general rise of prices benefited the agriculturist, but this benefit vanished rapidly as the prices of other commodities rose. Migration to the towns in search of factory employment was more noticeable during the years immediately following the termination of hostilities. The Indian ryot still suffers from great poverty and consequent indebtedness to usurious moneylenders. The spread of co-operative credit has relieved the burden a little, and it is a welcome sign that the agariculturist has learned to look with interest on schemes of co-operative production and selling. His traditional instinct inclines him to view with favour communal methods, and the co-operative movement has a great and splendid future in India. That the conservatism of the Indian peasant is a bar to progress is no longer true. Indian agriculture is capable of vast improvement; the chief requirements are provision of cheap finance, better marketing, and more knowledge coupled with enlightened tenancy legislation.

Progress in Cochin.

From the Cochin Administration Report for 1922–23, we note that during the year industrial loans amounting to Rs. 3,50,000 were issued. The forests resulted in a net surplus revenue of Rs. 2,16,211 as against Rs. 1,65,188 in the preceding year. A paucity in the demand for timber, especially teak and rosewood, is noted. The net earnings from the Railways totalled Rs. 4,45,855 for the past two years (1921–22 and 1922–23), which means a return of 5.93 on the capital outlay of Rs. 75,16,322. A sum of Rs. 58,996 has been spent on a Pottery Factory at Chalakudy, which is still incomplete. A modern coir factory is being set up at Cherai for the benefit of Tiya families dealing in cocoanut fibre industries. The factory is expected to undertake dyeing and bleaching operations and the manufacture of improved articles of such as beltings, rugs, mattings, etc. Sericulture as a cottege industry was investigated during the year and an experimental farm on a small scale has been opened at Trichur. The proposed Paper Pulp Industry is, we note, still under correspondence. The Industrial Advisory Board met on two occasions during the year and discussed important subjects. The experimental portion of the Cochin Harbour Scheme was completed during the year, the Durbar contributing Rs. 5,11,114 for its share of the cost of the main scheme as also of the reclamation around Vendurutti, which will remain the property of the State. The budget estimates of revenue and expenditure, *viz.*, Rs. 66,59,200 and Rs. 64,33,400 respectively had been so framed, we are told, as to leave a surplus of Rs. 2,25,800. But owing to the expenditure on the Harbour Scheme and to adjustment of Railway Expenditure and increased purchase of salt, the transactions of the year, however, ended in a small deficit. The actual revenue and expenditure stood at Rs. 74,60,952 and Rs. 74,76,101, resulting in a deficit of Rs. 15,149. But the State had at the end of the year under review an accumulated net surplus (partly in cash or at Banks and partly in securities or loans) of Rs. 30,31,706, after providing for all liabilities, which shows the stability of its finance. Altogether the year has been one of steady progress for the State, and Rao Bahadur P. Narayana Menon, I.S.O., its Dewan, deserves to be congratulated on it.

The proposal for the establishment of a Nautical School for Lascars in Bombay having met with the approval of the Bombay Chamber of Commerce the shipping companies concerned have expressed their willingness to accord a certain amount of financial support to such a scheme, provided that sufficient advantage was taken of the facilities offered by the school.

Government Annuities as Industrial Pensions.

By S. T. Bastedo,

Superintendent of Dominion Government Annuities, Canada.*

The question of industrial pensions is one which has for some time been occupying the thoughtful consideration of many employers and employees. It is one which, presumably, has been difficult of solution, as few, if any, Canadian concerns have in operation a pension system that is working satisfactorily, or that is constituted on a solvent basis. I am, therefore, glad of the opportunity which Mr. Walsh has been good enough to arrange for me of presenting for your information some of the salient features of the Government Annuities Act, which, I may say, was designed expressly for the purpose of affording the facilities whereby our people may be aided and encouraged to make provision for old age by the purchase of annuities. It contains a provision that employers of labour may, pursuant to agreement entered into with their employees in that behalf, contract with His Majesty for the sale to such of their employees as are resident or domiciled in Canada of annuities otherwise purchasable by such employees as individuals. Any sums of money necessary to the carrying out of this object, whether such sums are derived from the wages of the employees solely, or partly from the wages of the employees and partly from contributions of the employers, or from contributions of the employers solely; may be paid by such employers direct to the Government, and I am glad to be able to say that the Hon. Mr. Murdock, the Minister under whose direction the Act is now being administered, will be pleased to co-operate with employers and employees in their efforts to formulate a satisfactory scheme, by placing the machinery of the Annuities Branch at their disposal. The Act requires that any agreement entered into between employers and employees shall be of a form approved by the Minister, a proviso which was probably inserted in the Act so that the parties to the agreement might regard it as being equitable and just.

Employers Desire Solution.

I think it may be truly said that every employer of labour is desirous of finding a solution of this vexatious problem, and that he feels keenly the position of old employees who leave his employment after years of faithful service with, in a majority of cases, nothing but the open door of the poor house in sight. He is forced to dispense with their services if regard is to be had to the maintenance of a vigorous and active staff, and with the recurrence of these sad events, there is impressed upon him the advantage of a superannuation system under which he might be able to say to his employees as they reach the age of retirement: "Goodbye, go and enjoy your well-earned leisure."

It is not necessary for me to mention the difficulties with which employers and employees have been faced in their efforts to evolve a pension system, these being already too well known. Suffice it to say that both in this country and in the United States the pathway of industrial concerns which have attempted to operate such schemes on other than an actuarial basis is strewn with failures. It required but a few years of operation to demonstrate their inadequacy. Even so well managed an organization as the United States Steel Corporation, with a fund to begin with of $12,000,000, established jointly by the corporation and Mr. Andrew Carnegie, after five years' practical experience, found it advisable to change their superannuation plan to one on a reserve basis, and its then chairman, the Hon. Mr. Gary, to whose attention I brought the Canadian system in the hope that he might apply it to a small branch in Canada, said that if at the time their scheme was inaugurated there had existed in the United States such an opportunity as is provided by the Canadian Government, their pension plans might perhaps have taken some different form through arrangements with the Government.

Another large employer in the United States, with whom I had some correspondence in regard to the system which he was operating, said he had come to the conclusion after a number of years' experience that no such scheme could be operated successfully unless under Government control. As to the merits of the Canadian system, I might quote from a letter which I received a few years ago from an eminent Canadian, well-known throughout the Dominion as a leading authority on financial matters, and who possesses actuarial

* Substance of an address delivered before the Canadian Manufacturers' Association (1923).

qualifications second to none in any country. He said: "In discussing the system of Government Annuities with my friends from time to time I have always frankly stated that in my opinion the benefits offered for the rates charged are exceedingly liberal, and that I do not know of any institution which could possibly afford to offer terms so advantageous. If the general working population of Canada were able to realize the favourable basis on which Annuities could be secured from the Government, there would be very few among the thrifty and thoughtful who would not take advantage thereof."

Labour Turnover.

A matter which has become almost a nightmare to employers is that of labour turnover which occurs in the first two or three years of operation, namely, that restless desire to move from place to place which seems to periodically attack young unmarried men though the wages paid to them are as high as those paid elsewhere for the same class of work. It is believed that the introduction and operation of the Government system of providing for their retirement when their day's work is done would go a long way to put a quietus on this practice. It is further believed that the adoption of the system would promote closer relations between employer and employee, and would do much to secure that continuity of service so necessary to the successful operation of any industry and, therefore, would be in the interest of both employer and employee alike.

The system has everything to commend it. There is nothing experimental about it. The results are certain. The benefits are calculated on what is approximately a 5 per cent compound interest basis, and any scheme based upon it would be solvent. It has the security of the whole Dominion of Canada behind it. It would be free from all cost of administration, which would be borne by the Government. They are no forfeitures. If for any reason payments are interrupted, they may be resumed at any time, and if not resumed the annuitant will receive at the date fixed for the contract to mature such annuity as the payments made will purchase. The annuity cannot be alienated or anticipated. It cannot be seized or levied upon by the process of any Court. The contract is not transferable, so that no matter what pressure may be brought upon an annuitan he cannot be deprived of his annuity. It is positively the only plan of saving which will enable a man (or woman) to spend his capital as well as his income without his income becoming smaller no matter how long he may live, and it is only by such a system of investment that a wage-earner may expect to provide a competency for old age. Another important consideration is that the contract, being with the Government, the employee will have no cause for anxiety about the payment of the annuity when it becomes due, and no matter where he may reside or how long he may live the annuity will be paid to him every month. The system is most elastic, and it has been very properly described by an American writer on economic subjects as "the savings bank, the insurance policy and the endowment bond rolled into one." What better plan should be required or desired?

To Begin at Any Time.

An annuity of any amount from $50 up to $5,000 may be purchased to begin at any age desired. The age fixed will probably be the age when the employee may be expected to be no longer able to render a fair day's work for a fair day's pay, or when he may naturally wish to be relieved from arduous toil, usually at 65. But the time of retirement will probably have to be determined by the nature of the work engaged in, men in some occupations being, as is well known, old at 55, while in others a man may be able to render useful service even up to 70. But unless some systematic plan of saving, such as is provided by the Annuities Act is adopted, the large proportion of employees will reach the end of productive life without having accumulated any means of support.

The plan of purchase would be a matter of arrangement. A contributory system should commend itself to both. In that way the employer would be free from any suspicion that he had some ulterior object in view in advocating the plan, and the employee would appreciate to a greater extent that which has cost him something to obtain. He could authorize his employer to deduct from his weekly wage his share of the amount ascertained to be necessary to be paid to secure the annuity aimed at, the premium rate for the whole term being the rate paid at the age of commencement.

Under the Immediate Annuity System provision could be made for those old employees who have now reached the retirement age, and who are, from years of faithful service, entitled to friendly consideration.

With the tables which have been prepared,

and of which a copy will be found with the descriptive booklet which has been distributed, any employer will be able to calculate what the annual cost would be of carrying any number of men, or this would be calculated for him by the Department if the necessary data as to ages (last birthday) and the sex of the employees is furnished.

To illustrate the application of the system, I shall give you as an example the case of a young man of 20 desiring to secure at 65 an annuity of $25 a month, to be paid to him from 65 as long as he lives, with, in case of his death before the annuity becomes payable, a return to his heirs of the payments made by or for him plus 4% compound interest. The weekly payment in his case would be 40 cents, or on a 50-50 basis 20 cents by the employer and 20 cents by the employee. For a man of 25 the weekly rate would be 26 cents each; for a man of 30, 34 cents each; and for a man of 35, 45 cents each, the rate increasing as the accumulative period shortens.

If the man of 20 died at 64, his heirs would receive a lump sum payment of $2,570.66.

The Department will be glad to supply any employer contemplating the introduction of the system with the necessary explanatory literature for distribution among his employees, as it is most important that they should have a thorough knowledge of the proposition before entering upon it.

Broadcasting in India.

Considerable prominence is given by the *Englishman* to the recent experiment in Broadcasting in Calcutta. The subject is of great interest to many of our readers who have keenly followed the great developments that have taken place with wireless telegraphy in England. They are no less anxious to know what Calcutta—the first city in India to realize the importance of wireless—is doing. A special article in the *Englishman* states:—"Broadcasting in India reached another stage in its development last Thursday when there was issued from the station of the Marconi Company in Calcutta the first wireless news bulletin published in the country. The occasion was an historic one, not only in the annals of wireless telephony in the East but in those of news dissemination. The broadcasting of vocal and instrumental music had been going on—though so quickly and unostentatiously that very few people were even aware of it—for some months, but, lacking the license of the Government of India, the distribution of news had to be postponed. The license having at last been received, the officials of the Marconi Company actively and quickly got to work and with the hearty co-operation of the newspapers and news agencies they began last week to issue brief, though comprehensive, news bulletins. These bulletins were, admittedly, an experiment, but their success was immediate and news bulletins will in future be one of the main features of the broadcasting programme. The value of this new feature can hardly be overestimated. Wireless can never supersede the newspaper, but it can supply the bare skeleton of news of the highest importance and so give the lonely reader—perhaps hundreds of miles away—a synopsis of the "splash" news he may expect in full when his paper *dak* arrives." The article goes on to state that there are said to be eight outstanding uses for broadcasting in India. They are:—(1) To bring to the general public in their own homes good music and items of educational and general interest; (2) news; (3) dancing in the home; (4) broadcast of plays, operas, public speeches, etc.; (5) broadcast of appeals of national interest; (6) broadcast of reviews by special critics of new plays, films, books, music, etc.; (7) weather reports; (8) time signals, and there is possibility of broadcasted money market quotations. The value of broadcasting to the police and other authorities must be obvious to all. The range of uses is, however, almost without end. So general has broadcasting become in England that in cases of special urgency appeals have been broadcasted to people whose whereabouts at the moment were unknown. Hospitals and other public institutions have been fitted with receiving apparatus.

Reporting on the Trade of East Africa, the Trade Commissioner warns the United Kingdom manufacturers that in addition to competition from the Continent and India, Japanese manufacturers have now obtained at least a temporary domination in the market for unbleached piecegoods and are now extending their activities to the Manchester lines.

Engineering at the British Association.

The subjects allocated to the Engineering Section of the Liverpool meeting of the British Association dealt with some new and a number of familiar topics. They included joint discussion with the mathematical, chemical, and educational groups on cohesion and molecular forces—which drew a distinguished international gathering—and on the teaching of dynamics, which was drastically cut by a time limit. Other questions which received attention were transport by land, sea, and air, complex-stress distributions in engineering materials, conservation and control of water resources, wireless telegraphy in merchant ships, smoke abatement, lighting of coal-mines, the development of the single-bucket excavator, and electric propulsion of ships, says a correspondent of the *Times*.

Four papers were presented on different aspects of the transport problem. Colonel E. O'Brien dealt with the future of railways, Mr. A. E. Berriman with road transport, Sir Sefton Brancker with aerial transport, and Mr. A. T. Wall with the future of the merchant ship.

Railway Electrification.

The development of electric traction was the main theme of Colonel O'Brien's contribution. There is still, he said, a large field for the further extensive application of electricity to suburban traction. A double track suburban railway, if electrified, can provide a service of thirty trains of eight cars each per hour, equivalent to 15,000 passengers per hour, or 30,000 passengers in the two rush hours inwards or outwards: this means that such a route can serve a suburban population of about 200,000, and that a reduction in time of transit from suburb to business centre of about 25 per cent can be effected economically. At present, but four of the large towns in this country have a portion of the suburban services worked electrically. The cost of operation of these faster and more frequent electrically operated services is but slightly higher per train mile, allowing for interest and depreciation on the outlay involved, than that of the slower and less frequent steam services. The profit per passenger carried, therefore, remains constant, but, as in nearly every case the carrying capacity of the line electrified has been doubled and the increased capacity has been absorbed by the increase in passenger traffic, it is clear that such electrifications have been profitable to both railway companies and public alike.

A very slight lowering of rates of interest and of the price of the material required for such electrifications is likely to produce a very considerable development in future. There are no engineering difficulties to be overcome, while the only technical point at issue is the most suitable voltage for the third rail; natural development has standardized 600-650 volts in the London area, but if the recommendations of the Departmental Committee of the Ministry of Transport are followed 1,500 volts will be used in future round other cities. The 1,500-volt under-contact third-rail as now developed is likely to prove perfectly safe and satisfactory, and will permit of the future use of either 3,000 volts overhead collection or 1,500-volt third-rail collection for main-line work where required in future.

Case of Main Lines.

Dealing with main line electrification, Colonel O'Brien said that it is of interest to consider whether there is any future for main line electrification in this country where these conditions are not determinant factors. The average thermal efficiency of the steam locomotives in Great Britain probably is not in excess of 2 per cent; tests of modern steam locomotives in first-class condition with the best coal under conditions of maximum efficiency do not reveal an average thermal efficiency of more than 4 per cent on the basis of the actual coal burned between terminals, and exclusive of coal used for lighting-up, shunting, etc. The greater horse-power of an electric locomotive enables a much higher speed on up-gradients to be maintained with heavier trains. The thermal efficiencies of large modern power stations working at 40 per cent to 50 per cent load factor may be expected in the near future to be as high as 20 per cent; allowing for 84 per cent for the efficiency of transmission and conversion, 90 per cent for the rail and 75 per cent for the electric and mechanical efficiency of the locomotive, equivalent to 56.6 per cent over all, the total thermal efficiency from coal pile to draw-bar for the electric locomotive is about 11 per cent. A general electrification of an average section of busy main line might therefore be expected to diminish the coal consumption by at least two-thirds.

The cost of coal for generating current, however, is roughly only one-third of the

total cost of current delivered to the locomotive, so that as a matter of finance, as coal prices now stand, coal on the tender and equivalent current at the collecting shoe of the locomotive will be about equal in price after covering all capital charges on the electrical equipment. Economies apart from advantages will, however, be found in the cost of the repairs of the electric locomotive, which will be one-third to one-quarter of those of a steam locomotive per mile run, and in the employment of a single driver per locomotive instead of a driver and a fireman. Traffic advantages will also accrue from electrification on which it is difficult to set a money value. There is no doubt that the electrification of any main line containing gradients of 1 in 300 or greater and averaging over two trains per hour in each direction would at least involve no loss of any kind to the company undertaking it, while the indirect advantages to both the railway company concerned and the electrical industry of the country would be very large. Where the traffic is denser and the grades heavier than mentioned above a handsome return on the capital expenditure might be expected.

From the Ministry of Transport statistics it will be seen that in 1922 the average cost of operation per train mile for all classes of traffic in Great Britain was 10s. 10d., of which the locomotive expenditure on oporation and repairs amounted to 3s. 7d. On the assumption that a saving of one-third of the cost of locomotive operation would be effected by electrification the total saving in the cost of operation would be 11 per cent. Owing, however, to the enormous capital expenditure which would be involved in the electrification of the many branch lines with sparse traffic the economy effected would not be anything like 11 per cent. If a general electrification became possible due to some invention reducing the capital cost involved, and particularly if the cost of construction of the electric locomotive could be reduced, no doubt the result would react favourably on the public, but for the time being only special sections will be worth electrifying from the railway companies' point of view.

Commercial Road Motors.

In his review of the road transport question Mr. Berriman discussed the lines of technical development by which the commercial road vehicle is likely to be improved and the cost of operation reduced.

The author said that although the petrol-driven vehicle predominated for the heavier freight traffic on roads, steam has a considerable vogue in England. One of the chief virtues of the steam vehicle is popularly supposed to be the cheapness of its fuel, but its practical success is probably better founded on other grounds. Theoretically, coal yields about eight times more heat than petrol for the same money, and, allowing for inherent differences in the two systems, from two to three times as much road wheel energy for equal cost, but in practice, if the conditions are unsuitable or there is much carelessness, the relative fuel economy of the steamer is not realized in this degree.

In the direction of combining a cheaper fuel than petrol with the high efficiency of internal combustion there has been considerable experimental work, but as yet no established commercial success. Vehicles have been run experimentally with "semi-Diesel" engines, so called. If the use of a heavy distillate, such as kerosene or gas oil, is rendered really practicable under the conditions of road transport, its convenience will make it a serious competitor with coal, and its cheapness will put it ahead of petrol for use in commercial goods vehicles. Kerosene at 10d. per gallon should yield in an internal combustion engine practically as much road wheel energy for the same cost as high-grade coal at 50s. per ton used in a steamer.

There are two classes of heavy transport vehicles that derive their distinction not from a difference of engine, but from their peculiar means of supporting the load. They are the six-wheeler and the track machine. In the former the real object of using three axles instead of two is not to reduce axle weight, but to enable heavier or bulkier loads to be carried on a single platform without exceeding the permissible limits of size and weight. In the track machine the increase in load-carrying capacity is accompanied by an immense reduction in equivalent axle weight, but the main object of this design hitherto has been to eanble heavy loads to be negotiated successfully over soft unmade ground. The commercial future for this type of machine very largely depends upon the technical enterprise with which its limitations are overcome in directions that have precluded it from participating in the normal traffic on hard roads. Such a machine, properly suspended and steered, would cause very little damage to the roads; in principle it is a mobile railway.

Air Transport Costs.

In his account of the development of air services Sir Sefton Brancker traversed familiar ground.

He claimed that the necessary attention was being given to the technical side and that types of aircraft were being tested by the Air Ministry with the object of evolving the best types for short-distance work, for Eastern routes, and for long-distance non-stop flights. The basic problem, the education of the public, is, he states, unsolved. There is, he contends, no rivalry between the airship and the aeroplane. Each will fulfil its *role*, and it is possible to look forward to development on lines which are being gradually marked out. His main contentions are that air transport is safe and reasonably reliable, that working costs still too high are capable of reduction, that air transport is an Empire necessity. It is recognized that Government assistance must be given in the early stages. He produced an estimate of cost derived from the latest statistics of machines operating at 100 miles an hour, and this table is reproduced :

——	Heavy Traffic		Light and Fluctuating Traffic	
Annual mileage	2¼ million miles		One million miles	
Rate per ton mile	3s. 6d.		5s.	
PERCENTAGES				
Standing charges				
Administration and fixed charges	13.5%	49%	18.35%	64.35%
Salaries	20.35%		27.7%	
Depreciation & obsolescence	8.7%		10.5%	
Insurance	6.45%		7.8%	
Flying costs—				
Maintenance	19%	51%	13.3%	35.65%
Fuel	24.85%		17.35%	
Ancillary items	7.15%		5%	

Ship Design.

Mr. A. T. Wall outlined the probable trend of advance in ship design and construction, and the steps being taken to reduce building costs and reduce costs of operation.

He said that when Henry Bell built the Comet her engines produced about 1⅓ h.p. for each ton of machinery weight ; to-day the machinery of a modern torpedo-boat destroyer produces about 70 h.p. for each ton of machinery weight, an increase of about fifty times, and an aeroplane engine gives about 1,200 h.p. for the same weight of machinery, an increase of 900 times. The sets are not strictly comparable, of course, but the figures are eloquent.

The earlier marine engines consumed about 6 lbs. of coal per hour for each horse-power. To-day a marine oil engine consumes about four-tenths of a pound for each horse-power, approximately one-tenth of the consumption, allowing for relative fuel values. To-day we have boats which skim the water at high speeds, and boats which skim the water and fly in the air. Will such craft develop into larger sized vessels for open sea work ? Shall we ever see liners skimming the Atlantic ? It seems safe to say that our merchandise will continue to be carried in "displacement" ships as now for many years to come, but in ships vastly improved in construction and in propelling machinery, and possibly with reduced resistance to propulsion.

The shipbuider has still many problems to face. It is true that naval architecture and marine engineering are sciences, but as yet inexact sciences. Science must and undoubtedly will gradually displace art. It would be possible to make a long list of items requiring solution in all of which more exact knowledge would be of immediate value. For example, our information on the behaviour of ships at sea is meagre ; this includes rolling, pitching, and stability. Strength calculations have gradually become more useful to the designer, but at present they are relative rather than absolute. Much research work in experimental tanks and at sea is required to improve our knowledge of resistance and propulsion. As the fouling of ships' bottoms affects the running economy so adversely, its prevention is an important matter. Labour processes should be simplified. Some use has been made of high-tensile steel, particularly in warships, and in the Cunard vessels, Mauretania and Lusitania. Its use has been discontinued principally because its elastic limit was not sufficiently high, although its ultimate strength was great. A change is coming whereby elastic limit will be the criterion of strength of a metal and not its ultimate strength. Other things being equal, a metal with a high elastic-limit is to be preferred. There is already on the market and in use a high elastic-limit mild steel.

In modification of the existing arrangements, the Madras Government direct that the control and management of Agricultural Middle Schools should be transferred from the Educational to the Agricultural Department with effect from 1st April 1924.

Indian Economic Notes.

Indian Economic Conference.

There was a distinguished gathering in Bombay the other day at the opening of the Indian Economic Conference; and in welcoming H. E. the Governor to the Conference Mr. Subramani Aiyar spoke in the happiest possible vein. It is true that by the time Sir M. Visvesvaraya had completed his doleful story of an impoverished, statisticless and ignorant India there was not much room for smiles, but this came later and the opening of the proceedings was conducted in a thoroughly jocund spirit. Mr. Aiyar at once put Sir Leslie Wilson at his ease by assuring him that the Conference as a body had more money than it knew what to do with and had no intention of trotting out grievances to him or making direct or covert appeals for Government aid. This happy state of affairs is due mainly to Professor Tannan of the Sydenham College of Commerce and Economics who knows the way to relieve Bombay magnates of their spare cash in a good cause. Sir Leslie replied in an equally happy tone describing the gathering as unique in its freedom from financial embarrassments, and thanking Mr. Aiyar for the information about Professor Tannan whose services for his own (Sir Leslie Wilson's) purposes would probably be requisitioned. Speaking then in a more serious vein His Excellency spoke of the important advantages likely to accrue from a frank discussion of economic questions and difficulties. He pointed out that the main danger is that we should pay too much attention to financial deficits and too little to the human deficit. In other words we cannot over-estimate the danger of not doing all in our power to wipe away those deficits in education, production and industrial developement due to the upset caused by the war.

In his presidential address Sir M. Visvesvaraya in the first instance paid a tribute to British rule, under the stable conditions of which the growth of Bombay as a great commercial centre was made possible. The work has been carried on in various spheres by the leading men of each community, the Tatas, Petits, Currimbhoys, Mehtas, Goculdas and Thackerseys. But he passed from this to a gloomy comparison of the earnings per head in India as against the same in the United Kingdom, Canada and elsewhere. There is a low earning power, low level of efficiency, low standard of education. Conditions in India can be summed up by the two words ignorance and poverty. Then there is the almost total absence of anything in the way of exhaustive and reliable statistics, and above all, an almost entire absence of any technical and commercial education. As a remedy he advoacted an expansion of the Provincial Board of Industries, that starved and neglected Cinderella of Government Departments. He wants the Board placed under the control of a Minister-in-charge of Development Departments, advised by a Development Committee of the Legislative Council. Here the President was on ground he knew, and he was also sure of his position when he recommended an economic survey of India and other special measures for economic regeneration. But he got badly out of his depth when he spoke of the existing cotton industry, and in his enthusiasm for industrial expansion said that there is room for 300 more cotton mills in India and suggested that capital to provide them should be forthcoming from the State. But some of his suggestions were sounder, for example his proposal that commissions or committees would learn more in a month by visiting other progressive countries than they would in India in a year if they merely toured gathering opinions of persons who had had no practical acquaintance with any better state of things.

In the discussion which followed Professor Saunders pleaded forgive and take in respect of imperial econimic relations and Mr. J. A. Wadia made some caustic remarks about imperial preference saying that though India belonged to the empire the empire did not belong to her. Most speakers both on the first and second day agreed that though India is a rich country, productively, her inhabitants, generally speaking, are desperately poor. Professor Hamilton sees the remedy in birth control, Mr. Madan in agricultural co-operation, Professor Joshi in less agricultural expansion and more industrialism, and Professor Basu in increasing output from the land and in the income derived therefrom. Sir Ibrahim Rahimtoola wants to see both intensive agricultural and intensive industrial development and asks for a commission of experts. Perhaps we shall get this if the Government of India accepts the resolution which Mr. Phiroze C. Sethna brings forward in the Council of State.

India's Economic Condition.

An important announcement was made

on February 4 by Sir Narasimha Sarma in the Council of State during the discussion on Mr. Sethna's resolution for an enquiry into the economic condition of people, especially of the agriculturists. The Revenue Member informed them that the Government had decided to appoint an Expert Committee of four persons to enquire into the system of taxation, suggest steps to remedy the defects to advise the Government as to the machinery required for the imposition, assessment and collection of taxes, to prepare a rough estimate of the financial effects of the proposals and include in the scope of the enquiry the consideration of Land Revenue in so far as it was necessary for a comprehensive survey of the existing conditions. This committee would also collect all the available material for a wider economic enquiry.

Sir Basil Blackett stated that the committee would consist of four, one officer of the I.C.S. with wide financial and economic experience, an expert in taxation from England (probably Sir Josiah Stamp), an Indian Economist of recognized authority and an Indian Member Secretary, not necessarily an official. The first two will be Europeans and the other two Indians. Only the I.C.S. officer and the Member Secretary will have any official connection with the Government of India.

Several non-official members pressed upon the Government the immediate necessity of undertaking an exhaustive enquiry as proposed by Mr. Sethna and feared that the proposed Expert Committee into taxation might not command the confidence of the country. Eventually the Council adopted the formula moved by Sir Maneckjee Dadabhoy: That the Local Governments be consulted in regard to the desirability of undertaking an enquiry into the general economic condition of the people in British India as to whether they are prepared to support the proposal for the appointment of a committee and to co-operate in its labours.

It is understood that this committee will shortly be constituted and will finish its labours in a year. The appointment of this committee and its terms of reference have been agreed to by the Provincial Governments.

The resolution of Mr. Karandikar for the release of Mr. Gandhi was deemed to have been withdrawn as he was not present.

Taxation Committee's Terms of Reference.

In reply to an important question by Mr. Rangaswami Iyengar, Sir Basil Blackett said the terms of reference of the proposed committee on Indian taxation are to examine the manner in which the burden of taxation is distributed at present between the different classes of the population, (2) to consider whether the whole scheme of taxation, central, provincial and local, is equitable and in accordance with the economic principles, and if not, in what respects it is defective, (3) to report on the suitability of alternative sources of taxation, (4) to advise as to the machinery required for the imposition, assessment and collection of taxes old and new, (5) to prepare rough estimates of the financial effects of the proposals, (6) to include in the enquiry consideration of the land revenue only so far as is necessary for a comprehensive survey of the existing conditions. The Local Governments have agreed to an enquiry on the lines indicated in the above terms of reference without prejudice to the claims of their respective Governments in regard to the distribution of total revenue. It is expected that the committee, in the course of their enquiries, will find it necessary to examine the systems of federal finance as existing in other countries and to consider their applicability to the Indian conditions. The method of procedure which the committee will adopt will be a matter for their consideration on appointment. It is not unlikely that they will desire to make arrangements for special assistance whether by way of the appointment of assessors or by some other means for considering the particular conditions of the several provinces.

In addition to the enquiry into taxation the more important matters discussed at the Conference of the Finance Members of the provinces were the question of improving the arrangements for provincial borrowing and establishing a provincial loans fund, the adoption of general principles in regard to excise so as to avoid conflicts of provincial interests, the method of determining the Provincial Governments' share in revenue from unified stamps and assignments which will be made to Provincial Governments in respect of recent increases in stamp duty. The decisions of the Conference which were unanimous will require and have been referred to for confirmation by the respective Governments.

India's Cotton Trade.

Mr. S. Milligan, Agricultural Adviser to he Government of India, presided over the

Seventh Meeting of the Indian Cotton Committee on January 28. He referred to the discussions at the Board of Agriculture meeting at Bangalore and the satisfaction expressed by that body for the support which the Central Cotton Committee had received from all sections of the cotton trade. He also laid particular stress on the work done by the unofficial members of the Committee. They had made great progress in connection with the schemes of technical research. Their experimental spinning plant was getting ready. Mr. James Turner, lately Professor of the College of Technology, Manchester University, had taken up the Directorship of their Technological Branch and was sure to justify their policy. They could claim that their institute was unique and that in some respects was ahead even of America, as it was the only one for assisting agricultural investigators to obtain accurate knowledge of the new cottons. They were turning out and where the work would be directed especially to the improvement of raw cotton rather than the improvement of methods of spinning and manufacturing, which was in accordance with the basic principle of the Committee's scheme of agricultural research. A Standing Technological Sub-Committee would be appointed to collaborate with Mr. James Turner. The question of the increased use of Indian cotton in Lancashire was discussed at the last meeting of the Cotton Committee. The President said at present Lancashire was taking far more cotton than in the past and what was more satisfactory was a considerable quantity of superior Indian cotton. This tended to offer considerable advantage to the cotton grower. The exportable surplus of Indian stapled cotton was only a quarter of a million bales annually, which was a small proportion to the total export, but the agricultural officers who are attempting to introduce superior staple cotton had often experienced the difficulty that the premium on stapled Indian cotton was not uniformly satisfactory. A definite export demand would stabilize the margin and encourage production.

From the standpoints of both the Indian spinners and growers it was essential that a much larger proportion of Indian cotton should be of at least seven-eigth of an inch staple, a type which would be very well paid for in the world's market. In developing the export trade, India would have the hearty support of the Empire Cotton Growing Corporation. The Indian Cotton Committee, said Mr. Milligan, was now a unique organization representing all sections of the cotton industry in India, incorporated by legislature with the finance necessary for carrying out its research and a constructive programme in the direction of obtaining for the grower the real value of his produce.

Cement Manufacture in India.

In 1919 an enquiry was set on foot in the United Provinces, under Government auspices, into the possiblities of manufacturing Portland cement in India, and Mr. Watson, Principal of the Technological Instutute, Cawnpore, and his two Assistant Chemists, Messrs. Muckerjee and Chatterjee, were entrusted with it. Their business was to check and supplement a former inquiry by a Railway Engineer, Mr. Hallidy, and to confirm conclusions based on chemical analysis by the actual production, on a small scale, of cement from materials which analysis indicated as suitable and by tests of the sample of cement produced. The results of this inquiry, now published in a Bulletin of the Government of India Industries Department, go to establish the possibilities of cement manufacture so far as the United Provinces are concerned.

Materials Available.—The most common raw material for the purpose in the Province is *kankar*, which, according to the reports of all the executive engineers in the districts to whom inquiries were addressed, is available almost anywhere in the Province. To test the quality of the *kankar* and to determine the percentage of calcium carbonate various analyses were made. Except Shaharanpur Nos. 1 and 2, the mixture of which contained all the constituents within the prescribed limits for cement manufacture, the common form of *kankar*, contained a lower percentage of calcium carbonate and therefore required admixture with some other material richer therein. The percentage of magnesia also was generally too high in the samples examined, except in those from the south-west of the Province.

Besides *kankar*, which is common everywhere, marl deposits recently discovered near Lucknow contain an average percentage of over 42 of lime and of 1·6 of magnesia. There are large deposits of suitable clay adjacent to the marl; the worst feature about these clays is the percentage of magnesia. The analysis of cement actually produced from these materials gave 2·9 to 3·2 per cent of magnesia. Some experiments in washing the

ground mixture of marl and clay brought the percentage in the finished product within the 3 per cent limit.

In addition there are the travertine deposits near Hardwar and calcareous deposits near Kathgodam and Tanatpur which would probably be suitable for cement manufacture if hydro-electric power were developed. There are also large limestone deposits in the Mirzapore district which only await transport facilities for exploitation. The limestones found in the neighbourhood of Sutna and Katni are of good quality, a typical sample containing over 53 per cent of lime and 1·2 per cent of magnesia.

Considered econimically, the present financial depression and the increased cost of labour, as well as of buildings and machinery, make a new enterprise difficult of success. Though it is true that the price of cement in India is still high, as high as Rs. 105 per ton, it would be safer not to rely on this, but to compare the cost of production in the Province with the cost of production in other parts of India. For manufacturing cement at Cawnpore from local *kankar* and Sutna limestone, about 0.8 ton of *kankar*, 0.8 ton of limestone, and 0.75 ton of coal would be required for one ton of cement, and it is calculated that the cost would be Rs. 10.4 per ton. But for the manufacture of one ton of cement at Japla, near Dehri-on-sone, where large works are being erected, and its carriage to Cawnpore, Rs. 8.4 per ton would have to be paid. A project at Cawnpore would then be at a disadvantage. On the other hand, a project to manufacture cement from marl and clay near Lucknow would be successful, as freight would not have to be paid on any raw material except coal. Private interests are being attracted to take up this enterprise.

Small-Scale Experiments. — Experimental investigations to prove the commercial success of the project on a small scale were elaborately conducted. The chief difficulty lay in calculating the proportions in which the two ingredients had to be mixed, but successful results were obtained with a mixture of 65.9 parts of Madharman (Lucknow) marl and 34·1 parts of Madharman (Lucknow) clay. The experiments with *kankar* and limestone gave greater trouble, and had to be continued until a mixture was made of 56.4 parts of Sutna limestone with 43.6 parts of Cawnpore *kankar*, which gave satisfactory results.

The question of soundness gave some trouble, and a great deal of work had to be done before it was settled. It was thought that the unsoundness was due to the fact that the temperature of the furnace was not high enough, but it was eventually found that with seasoning all soundness trouble disappeared. As a rule, the soundness was satisfactory after seven days' seasoning.

Income-Tax Act.

A Bill to further amend the Income-Tax Act, 1922, has been introduced in the Legislative Assembly. The Income-Tax Act, 1922, did not provide for the assessment of the income, profits or gains of an association, or club, which is neither a company nor a firm nor a Hindu undivided family. It is now stated that this was an omission, as it was always intended to tax associations or clubs. Certain clauses have been amended in the Bill to give effect to this intention, while an added clause validates assessments made during the current year. The Provident Insurance Soceities Act, 1912, was never intended to apply to the Provident Funds of private companies and firms, but in certain provinces such funds have been exempted from the provisions of the Act, with the result that they enjoy the concession given by certain sections of the Income-Tax Act, 1922. As it was never intended to grant this concession to private Provident Funds, it has been proposed to omit all references to Provident Insurance Societies from certain specified sections of the Act. There is no provision in the Act for the assessment of a business, profession or vocation, which was in existence at the commencement of the Act but on which no tax was changed at any time under the provision of the Income-Tax Act, 1918. An amended clause in the Bill rectifies this omission. At present there is no period, whithin which an assessee should apply to the High Court for the issue of a *mandamus* under Section 66 (3) of the Act, with the result that applications are occasionally made several months after the Commissioner has refused to state the case to the High Court, but an amended clause of the new Bill prescribes a period, within which such applications should be made.

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A Bill to further amend the Income-Tax Act, 1922, has been introduced in the Legislative Assembly. The Income-Tax Act, 1922, did not provide for the assessment of the income, profits or gains of an association, or club, which is neither a company nor a firm nor a Hindu undivided family. It is now stated that this was an omission, as it was always intended to tax associations or clubs. Certain clauses have been amended in the Bill to give effect to this intention, while an added clause validates assessments made during the current year. The Provident Insurance Societies Act, 1912, was never intended to apply to the Provident Funds of private companies and firms, but in certain provinces such funds have been exempted from the provisions of the Act, with the result that they enjoy the concession given by certain sections of the Income-Tax Act, 1922. As it was never intended to grant this concession to private Provident Funds, it has been proposed to omit all references to Provident Insurance Societies from certain specified sections of the Act. There is no provision in the Act for the assessment of a business, profession or vocation, which was in existence at the commencement of the Act but on which no tax was changed at any time under the provision of the Income-Tax Act, 1918. An amended clause in the Bill rectifies this omission. At present there is no period, whithin which an assessee should apply to the High Court for the issue of a *mandamus* under Section 66 (3) of the Act, with the result that applications are occasionally made several months after the Commissioner has refused to state the case to the High Court, but an amended clause of the new Bill prescribes a period, within which such applications should be made.

India and Parliament.

The *Times of India's* London correspondent writes :—Sir Sydney Olivier is a man of great abilities, but he is described as an opinionated doctrinaire who was not successful at the Board of Agriculture.....He will probably be given a peerage. Professor Robert Richards, the Under-Secretary, is unknown. There is much speculation why Mr. MacDonald when constituting his Cabinet so carefully gave offices, which may bring him great difficulties —to men who do not command public or official confidence. Labour would like to leave India alone, concentrating on foreign and domestic questions, but India may refuse to be let alone. My explanation is that Mr. MacDonald means to keep the main direction of Indian policy in his own hands, wanting only executive instruments to execute his policy.

In his book "White Capital and Coloured Labour" Sir Sydney Olivier has given expression to views on the relations of white and coloured peoples which are as refreshing as they are rare in these days of exploitation and narrow imperialism and which show that the author looks at racial questions from a broad humanitarian point of view. He is neither a politician nor a statesman in the ordinary sense of the term, but he is something more, he is a believer in the common origin of the human race and the kinship of all peoples black and white, bleached and unbleached, brown and yellow. Never before had India a Secretary of State of his type, and hope is mixed with curiosity in the mind of Indians as to how his personality will manifest itself in his dealings with India. In his book referred to above he has exposed the claim of white trusteeship in coloured Africa thus :—"To imagine that those who put themselves into contact with uncivilized races with a view to their own economic profit are going morally to improve the latter is most simple-minded of self-complacencies.....On the countries where the white man has, with whatever philanthropic excuse or pretext enslaved and used the black for his own profit, a curse still rests.....Where colour prejudice rules, where human identity is most passionately disowned, there the prospect of the emergence of a wholesome society is least hopeful ; where prejudice has died down and men take their rank on their merits, there the community shows most promise."

He does not think that the coloured races are inferior beings and that white men have been created to watch over their interests and to impart to them the blessings of their own materialistic civilization. 'For my part', he wrote, 'I am a member of the human race, which is as a whole considerably lower than the angels, so that the whole of it very badly needs race elevation. In this need of my race I personally and very deeply share. And it is in this spirit only that I am able to approach our problem.' If he approaches the Indian problems in the righteous spirit of service of humanity with a view to promote the moral and material well-being of the people of this country, and utilizes his office for securing the triumph of justice in the largest sense of the term, he will earn the gratitude of the millions of India and will in addition inaugurate a new era in human relationship which will contribute to the peace and progress of the world.

Secretary of State.

There are good grounds for accepting Mr. C. F. Andrew's statement to the *Leader* that the new Secretary of State for India, Sir Sydney Olivier, is entirely pro-African, and in full sympathy with the backward races. His most recent contribution to literature takes the form of a preface to a volume entitled, "John Smith of Demarara," of which Mr. David Chamberlain, of the London Missionary Society, is the author. The hero of the book is a young English missionary who, exactly one hundred years ago, was condemned to death in British Guiana, ostensibly for holding back the knowledge of a small outbreak among the slaves there, but really for the crime of teaching them to read. In the course of a long preface to the volume, Sir Sydney Olivier says : "The actual efficient agency which did destroy the slave trade and slavery in British Colonies was a religeous ferment ; an invincible conviction that slavery was non-Christian and destructive of spiritual life, both in those who were subject to it and those who maintained themselves on its basis and profited by it. Slavery, and all modified forms of slavery, such as the forced labour of natives in African territories for European settlers, have usually been justified from the secular side ; but it is within the scope of my experience and observation, the Christian missionary (who believes that progress in secular welfare depends on progress in spiritual life) who is most

generally to be relied upon to take a clearer, wider, wiser, and more far-reaching view of what is essential for the advance and development of the more backward races. In the great territories of Africa it is still, from the secular point of view, essential for the welfare of Africans that missionary work should be maintained for precisely the same reason as inevitably made the missionary societies that were founded in the eighteenth century not only factors in the propagation of religion and education but vital agents in the prevention of slavery and oppression. The tendencies which gave birth to the outrages on John Smith and the Jamaica missionaries, however astonishing their story may appear to those who read of these events for the first time, are, in fact, active and operative so long as a stronger race has command of the land and the labour of the backward, uneducated and the unenlightened one." It will be seen that the new Secretary of State for India has a broad and sympathetic outlook on Empire and Imperial problems, which are viewed from a very different standpoint to that of the average Imperialist. His experience as Governor of Jamaica was characterized by the same policy, and we shall probably learn some valuable points from his statement on India in Parliament which is eagerly looked forward. Unhappily a cable recently announced that Sir Sydney was suffering from hoarseness and the statement may have to be postponed for a few days unless his condition improves.

PROF. R. RICHARDS, UNDER-SECRETARY OF STATE FOR INDIA.

Professor Robert Richards, who has been the Labour Member for the Wrexham Division of Denbighshire since 1922, has been appointed Under-Secretary of State for India. He is Professor of Economics at Bangore University and was educated at Cambridge University.

The London correspondent of the *Statesman* conveys the interesting information that Prof. Richards, the Under-Secretary of State for India, is an ardent temperance reformer and that the majority of the Cabinet are teetotalers. According to the correspondent Sir Sydney Olivier expressed the view to his colleagues at the India Office that he was anxious for democratic advancement at the highest practicable speed. Labour's attitude towards India is said to be thus crystallized: "Britain's first duty to India is to provide an opportunity for responsible government. Our second is to be adamant against agitation which threatens to ruin even the beginnings of 'self-government'. Extremists on both sides may please take note of this. Lord Reading has now a splendid opportunity of doing something substantial for India and making his lustrum a memorable one. The time is now overdue for his Government to make constructive suggestions for further political advance in accordance with public demand."

Sir Sidney Olivier.

Sir Sidney Olivier, B.A., LL.D., K.C.M.G., the New Secretary of State for India, is the second son of a clergyman, the Rev. H. A. Olivier of Winchfield, and was born in 1859. He received his education at Tombridge School and Corpus Christi College, Oxford. He entered the Colonial Office (heading the open competition) in 1882, and was Secretary of the Fabian Society from 1886 to 1890. Under the Colonial Office, he served in British Honduras, and the Leeward Island. He was Secretary to the West Indies Royal Commission, 1897, and in the following year he was sent to Washington to assist in reciprocity negotiations on behalf of the West Indian Colonies. From 1899 to 1904 Sir Sidney Olivier served as Colonial Secretary, Jamaica and acted as Governor there in 1900, 1902 and 1904. From 1904 to 1907 he was Principal Clerk, West African and West Indian Departments, Colonial Office. The years 1907 to 1913 saw him as Governor of Jamaica. On his return home, he was Permanent Secretary of the Board of Agriculture and Fisheries from 1913 to 1917 and Assistant Comptroller and Auditor of the Exchequer in 1917. He retired in 1920.

The Lancashire cotton industry, which Mr. Lynd has been doing his best to improve, is mentioned in a curious petition to Parliament by the merchants of London in 1921. "For 20 years past," complained the merchants, "divers persons in this Kingdom, but chiefly in the country of Lancaster, had been injuring the wollen trade by making fustians of a kind of bombast of down growing upon small shrubs brought by the Turkey merchants from Smyrna, Cyprus, and Sydon, but commonly called cotton wool."

Economics in the West.

World rise in Prices.

A general movement of rising prices throughout the world is indicated by figures given in the *International Labour Review* for December.

According to these figures, wholesale prices show a more or less definite upward movement in most countries of the world. These countries may be divided into two groups. The first group includes Germany, Russia and Poland, in which the movement is the result of the general economic situation and of the depreciation in the currency, and prices have been steadily rising for several months. The second group includes Spain, the United States, India, Norway, the Netherlands and New Zealand; in these countries, the situation is not becoming perceptibly worse and prices tend rather to fluctuate.

In Germany wholesale prices continue to rise rapidly. A remarkable feature recently has been that wholesale prices have risen even more than the dollar exchange, so that prices in Germany for a great many manufactured products are higher than world prices. At the beginning of October, the gold value represented by the index numbers of the *Frankfurter Zeitung* for the mineral group was double, and for textiles one-and-a-half times the pre-war price. The prices of foodstuffs are the only ones still below world prices.

In retail prices, there is a distinct rise in Germany, Russia and Poland, and in Austria and Hungary. There is a rise on a much smaller scale in Belgium, France, Finland, Italy, the United Kingdom and the United States, while prices are stationary in South Africa and Spain, and falling in Egypt, Norway and Luxemburg.

For Germany the account given above of wholesale prices applies also to cost of living, as changes in wholesale prices are reflected in retail prices within a week.

Prices are steady in the oversea countries, Canada, the United States, South Africa, Australia and New Zealand, with a downward tendency in Australia, and an upward tendency in New Zealand, the latter probably due to meat which is imported from Australia.

Match Sales in France.

In their endeavours to reduce waste the French Government are considering the advisability of handing over the sale of matches to private initiative. Apparently no definite plan has been formed; the monopoly may be given to a private concern or a tax may be levied on sales and the trade be freed. The latter action would probably lead to an improvement in the quality of the matches; on the other hand, revenue from a single corporation enjoying a monopoly would be surer, though possibly smaller. It is understood that suggestions from match manufacturers in other countries would be appreciated.

The taxation of matches was inaugurated at the close of the Franco-Prussian war, when the new sources of revenue had to be found. A private company was then granted the monopoly. This monopoly was withdrawn 17 years afterwards, when the State became the sole manufacturer. The output gradually increased. Receipts rose from 25 million francs in 1892 to 40 millions in 1924. In 1922 they were 114 millions, and last year 116 million francs. The number of matches sold was 27,654 millions in 1892 and 55,000 millions last year.

"Overhead" expenses last year amounted to 51 million francs, a sum which it is believed a private enterprise could reduce, thus giving the State a larger revenue from this source. Private initiative might well result in a profit to the State of another 15 or 20 million francs. A corporation which took over the manufacture of matches in France would presumably not be prevented from selling abroad. It could also increase the sale of the better type of matches, on which profits are larger.

Preference Proposals Supported.

Resolutions urging the Government to take steps to secure a payment on account from France and Italy pending a settlement of inter-Allied war debts on a fair basis and welcoming the appointment by the Reparation Commission of a committee of experts to assist in the solution of reparations problems were passed by the quarterly meeting of the Association of British Chambers of Commerce at Birmingham recently.

A resolution urging the Government to lay before Parliament promptly a Bill to carry into effect the economic and financial resolutions of the Imperial Economic Conference was carried by a large majority.

It was agreed that the resolutions passed by the Postal Conference on the previous day should be referred to the Executive Council for early and energetic action. The Executive was also urged to take all steps to press for enactment of the amendments to the Bankruptcy Act suggested by the report of the sub-

committee on the subject. A resolution was passed requesting the Executive to impress on the Government the importance of amending Rule 13 of Cases I and II of the rules applicable to Schedule D of the Income-tax Act, 1918, so that its provisions will apply to limited companies as well as to persons, either solely or in partnership, carrying on two or more distinct trades. The meeting also passed resolutions urging the abolition of the corporation profits tax, calling for a reversion to the penny stamp duty on receipts and cheques, and urging support of the British Empire Exhibition. It expressed regret that opportunity had not been found in the last Parliament to pass the Carriage of Goods by Sea Bill into law, and requested that the Bill should be given an early place in the programme of business for the new Session. Sir Arthur Balfour, who presided, remarked that Mr. MacDonald was in agreement with their views concerning the Bill.

A resolution was passed urging that in view of the serious decline in British trade with Turkey, due largely to the disability financially of British firms in Turkey to push their trade owing to the non-payment of their claims for the value of goods requisitioned by the Turkish Government, or destroyed, the Association should give its full support to induce the British Government to take into consideration the just demand of traders for payment of their claims in Turkey.

Iron-Ores of British Columbia.

In connection with the report referred to last week that a number of Sheffield firms are concerned in a scheme for establishing an iron and steel industry in British Columbia, the following remarks by Mr. G. A. Young, of the Canadian Geological Survey, are of interest:—

The project of establishing on a large scale an iron-making industry in British Columbia using native ores and fuels has attracted more than local attention. Supporters of various proposals have contended that such a plant would not only have a monopoly of the market of Western Canada but also should be able to build up a large foreign market in countries bordering on the Pacific. It has been repeatedly asserted that adequate supplies of iron-ore, fuel and fluxes are available at various places along the sea-coast of the province.

The general subject being of very considerable national and provincial importance, the Geological Survey of Canada, in co-operation with the Department of Mines, British Columbia, has undertaken an investigation of the iron-ore resources of the province. It has long been known that many bodies of iron-ore exist on or close to the mainland coast and the shores of Vancouver Island. Except at a few localities where limonite or bog iron-ore occurs, the deposits are all of magnetite carrying no titanium and, so far as known, having a very low phosphorus content. Considerable progress has already been made in the examination of the known ore occurrences, and it is expected that by the end of this year sufficient information will have been collected to indicate definitely whether or not there exists a reserve of iron-ore large enough to warrant the establishment of a blast furnace plant.

The Norwegian Match Industry.

Some interesting details concerning the match industry of Norway appear in the *Norwegian Trade Review* (Christiania). At one time a small industry, the manufacture of matches, commenced in Norway on a really large scale in 1846, the phosphorus kind being produced. Since then a number of factories have been erected, and those now existing are owned by two firms, one of which controls the preponderating share of production. At the present time the safety match is the main product. The great bulk of the splints are made of aspen wood, most of which is imported from Baltic countries, and the boxes are usually composed of the same material. The fact that Scandinavian makers continue to ship large quantities of matches to every market, notwithstanding the disadvantage of having to import most of the raw material, is accounted for by the efficient manufacturing methods they employ. The invention and adoption of one new machine after another, even where less perfect ones are still quite serviceable, is their guiding principle. The whole process has been moulded into one uniform system to ensure the highest working capacity and the least possible waste.

Capital for Russian Forest Enterprise.

The possibility of interesting foreign capitalists in a rational exploitation of the very valuable forest lands in the neighbourhood of Gagry and Suchum on the Caucasion side of the Black Sea is being seriously contemplated at Moscow. The area in question is covered to an extent of 70% with furs, the remainder of the ground being under foliage trees, principally beeches, yews, nut-bearing trees, box and other species of timber suitable for furniture making. Italy, France and the Near East have been mentioned as the most likely markets. There are two large factories at

Gagry, which, if adequately restored, could cope with the work of handling the timber. The chief obstacles are the want of good roads and the very scanty population.

GOVERNMENT HELP FOR INDUSTRY.

With a view to the development of the nitrogen industry in Czechoslovakia, which, up to the present, has been unable to gain a firm footing in the Republic, the Ministries of Agriculture, Public Works and National Defence, in collaboration with the Finance Ministry, are now working out the draft of a law, intended to grant considerable facilities to this industry, thereby rendering an expansion possible. Simultaneously, this law will consider the possibility of a more extensive brown coal distillation. Provision will be made in the law for considerable reductions as regards taxes and dues for these two branches of industry, and probably the companies to be founded in this connection will be exempt from all dues for a period of 15 years. That great interest attaches in industrial circles both at home and abroad to the foundation of works in this line in Czechoslovakia is apparent from the fact that the establishment of a factory for the preparation of nitrogen, ammonia and fertilizers has already been definitely planned. The problem of raising the necessary capital is now engaging the attention of the interested circles and is likely to find a satisfactory solution, seeing that prominent concerns working on similar lines have been induced to take an active interest in the enterprise. The actual foundation of such establishments, however, will only ensue after the tax facilities anticipated have been made the subject of legislation.

LATE SIR HENRY KIMBER.

Sir Henry Kimber died at his residence in Putney on December 18th, at the age of 90. He had been a member of the Royal Society of Arts for 47 years, having been elected in 1876.

Born in 1834, he was educated at University College, London, and was admitted a solicitor in 1858. He founded the well-known firm of Kimber and Ellis, now Kimbers, Williams and Co., from which he retired in 1890. During his professional career of 40 years he was engaged in many famous cases, prominent among which were the "Balham Mystery" and the scandals in connection with the Grosvenor Hotels Company.

Sir Henry Kimber was a director or chairman of many railways and industrial companies, including, among others, the South Indian Railway, the Pondicherry Railway, the Royal Swedish Railway, the Capital and Counties Bank, the Natal Land and Colonization Company and the Colonist Land and Loan Corporation. He entered Parliament as conservative representative of Wandsworth in 1895, and retained the seat till 1913. He worked hard in the endeavour to correct electoral anomalies by a fair scheme of redistribution, and he rendered much valuable service on Parliamentary committees.

BANK OF ENGLAND.

Mr. Montagu Collet Norman has been nominated for re-election as Governor of the Bank of England next April for the ensuing year 1924-25. This will make the fifth term that Mr. Norman has filled the office, and in this respect he will equal the previous exceptional period of service of Lord Cunliffe, who was Governor for five consecutive years, between April 1913 and April 1918. The old rule of the bank previously had been that the Governor should hold the office for two years and then be succeeded by the Deputy Governor. This tradition has been broken by the exceptional strain thrown upon the Bank of England by the war and its aftermath. Continuity of policy has been needed to an extent that had not been felt before, and the question arises whether the Bank of England will ever go back to its old practice. Indeed, the experience of the last ten years has clearly demonstrated that a permanent Governorship is preferable to the short periods of power that were the rule before the war.

COMMERCIALIZATION OF STATE ENTERPRISES.

In its plenary session last week, the Prague Chamber of Commerce passed a resolution dealing with the problem of a more commercial management of the various State enterprises, such as has been proposed in Czechoslovak Government circles for some time past and is now likely to be put into practice. While warmly welcoming a more businesslike and up-to-date system, the greater efficacy and promptitude of which would be bound to benefit the public, the Chamber expressed the opinion that the forthcoming reform should not be seconded without discrimination. State enterprises were of a two-fold nature, comprising such as had a purely economic character and such as were primarily intended to serve purposes of public utility. The former could not but gain by a really businesslike management, but if treated from the commercial standpoint they should be made as profitable as any private concern, which they should not be allowed

to undersell by virtue of their semi-official character. The monopolies, meanwhile, presented the most difficult problem, since the nature of the commodities affected made big profits reacting adversely on price undesirable. In this connection a completely commercial management was hardly desirable, unless the monopoly were waived and the State merely continued to produce alongside of private enterprise. Finally, the public utility concerns made any far-reaching form of commercialization appear objectionable, so long as the State retained control. Such was the opinion registered by the Prague Chamber.

The Cotton Crisis.

The current issue of the American Review *Foreign Affairs* contains a very interesting article on the cotton crisis by Professor J. A. Todd, who points out that it may be taken that the world requires twelve million bales of American cotton per annum as a minimum, and that that figure now represents the probable maximum of the crop. "Such a situation," he adds, "can only result in periodic scarcity until the supply is increased. It therefore becomes of the first importance to consider the prospects of such an increase." He gives in tabular form details of the world's supply of cotton of fine, medium, and short staple, showing that while the average pre-war crop of the world totalled 25,137,000 bales, the average post-war crop is no more than 20,205,000 bales. The special interest of the statistics lies in the light thrown on the very small supplies of cotton that are as yet forthcoming from within the Empire. Leaving Egypt out of account, the total contribution of the Empire to the post-war total is only 4,104,000 bales, and of that India supplies 4,000,000, and as much of that is not capable of being used by Lancashire spinners, the real contribution is, of course, very considerably less. The figures given, as I have mentioned, represent the average post-war crops, but, making allowance for the improvement that has been made, they bring into clear relief the enormous leeway that has to be made up. Much time must elapse before the Sudan is producing, say, 500,000 or 1,000,000 bales, but even the latter figure, large as it is, only represents a small proportion of the world's cotton supply, though it would mean a very substantial contribution to the supply of long staple cotton, the average post-war crops of which amount to only 2,030,000 bales.

Progress of Italian Sugar Mills.

The latest estimates published by the Sugar Union place this year's crop in Italy at between 2,700,000 and 2,800,000 tons of sugar beet, with a much higher sugar content than of recent years. It is expected that the output of the refineries will exceed 300,000 tons, thus breaking the "record" of 1913, and the yield, it is confidently believed, will suffice to cover the needs of the home market.

Several new sugar mills are being built, and it is predicted that in a few years' time the output will be sufficient to provide a margin for export. At the same time, the manufacture of jams and preserves, considerable quantities of which are exported, is becoming an important industry, the prosperity of which is intimately connected with that of the sugar refineries. The Italian output of refined sugar totalled 260,000 tons during the agricultural year 1922-23, as against 160,000 during 1919-20 and 90,000 during 1917-18. In 1914-15 the output amounted to 140,000 tons. The price of sugar is very high in Italy, due mainly to the heavy excise duty levied by the Government. The customs duty on imported sugar is now 10.8 gold lire per cwt. The annual consumption of sugar in Italy was about 6 lbs. a head in 1900, 11 lbs. in 1911, and has averaged about 17.2 in recent years. During the war years the acreage under beet declined rapidly, but in 1921 the pre-war figure was almost attained, and in 1923 it rose to 223,200 acres. The sugar industry now represents an investment of about 400 million lire (about £4,000,000 at the present rate of exchange), and is carried on in 40 sugar mills and 12 refineries, belonging to 24 companies scattered over the Peninsula. The sugar mills are equipped to deal with 40,000 tons of beet daily, and the daily output of the refineries is estimated at 200 tons of sugar, the industry employing about 5,000 workers.

Dr. H. Martin Leake and Egyptian Cotton.

The *African World* of October 27th tells us that Sir John Russell, Director of the Rothamstead Experimental Station, is leaving England on a special mission to the Soudan. He will be associated with Dr. H. Martin Leake, M.A., Sc.D., F.L.S., Director of Agriculture for the U.P., India, in advising the Sudan Government on its agricultural research policy, mainly connected with cotton.

The first instalment of the great irrigation scheme in the Gezira plain, south of Khartum, we are told, is expected to come into operation in the Autumn of 1925. At this stage 3 million acres will be put under irrigation, of which 100,000 acres will be under cotton; but the

total scheme is capable of development over an area of 3 million acres (does this mean for cotton cultivation alone ?—Ed.). It is hoped, continues the *African World*, that the Empire Cotton Growing Corporation will co-operate with the Sudan Government in the research work to be carried out.

It will be remembered that Dr. Martin Leake has already had considerable experience in connection with cotton research work in Egypt. In May 1919, he was asked to present a report on the maintenance and improvement in the quality in Egyptian cotton and the increase of its yield. This report made its appearance early the next year (1920) and was extensively quoted and even reduced in full. Copies probably are still available on application to the Ministry of Agriculture at Cairo. It should also be remembered that this department at Cairo has issued important annual reports since 1920, on cotton research work and the various qualities and varieties produced in Egypt. Every one interested in cotton, raw and manufactured, at the present critical stage of the dual industry, should study these publications. Were they better known we feel quite certain that far more satisfactory progress would be reported all along the line. It is fully time that some progress became apparent.

President Harding on Co-operation.

A speech delivered by the late President Harding at Idaho Falls not long before his death contained the following passage showing the great importance he attached to the growth of the co-operative movement :—

"We realize that the real producer, under our elaborate and costly system of distribution, is not permitted a fair share of his product for his own use and enjoyment. We have become convinced that somehow our system of distribution has grown too cumbersome, too costly, too complex, too indirect, too unrelated to the interests of real producers and legitimate consumers.

"We must find methods to take up as much as possible of the slack in the long line between producer and consumer ; to give the producer a better share in that which he furnishes to the community and to enable the consumer to meet his requirements at reasonable cost.

"The need of this time is to shorten the bridge between producer and consumer, and to reduce the toll that must be paid for passing over it.

"We all know a good deal about the various co-operative societies, associations and corporations which have undertaken, in many cases with notable success, to improve the position of the agricultural producers. Such organizations have been successful in all parts of this country, and in many parts of the old world. They have already done a great work, and taught us many valuable lessons. Where there are obstacles, imposed by unfortunate statutes or public policies, in the way of expanding such activities as these, they might well be gradually removed through measures of helpfulness and encouragement.

" On the whole, I think the agricultural community has been more alive to the promotion of its interests along these lines than has the urban community. The farmers have seen where their interests lay, and have been more prompt and energitic in adopting effective measures to promote them than the people of the city and town have been. There is need to have working and practical co-operative associations of producers in the country and at the same time to have equally effective corporations among the consuming communities of the cities and towns ; and, finally, to link these sets of co-operators together in a co-ordination for mutual advantage to both."

There was interesting debate in the House of Commons in mail week in connection with the motion of the Labour party for the gradual abolition of the capitalist system. The most powerful indictment against it was drawn up by Mr. Clynes who said :—"What could be said for a system which had given to Britain the costliest work-houses in the world, which left hospitals dependent on charity, and which subjected millions of wage-earners to a level of subsistence lower than that of prisoners and paupers ? What could be said for a system in which hardened judges and magistrates had recently openly condemned the sinful parade of luxury and waste ? Capitalism could not even supply the necessary number of humble homes for the best of our manual workers. Our prisons and public lavatories were better built than the dwellings of millions of the poor."

Notes from America.

IS THE U.S. FACING A COTTON FAMINE?

New York.—The worst cotton famine since the Civil War, the closing down of hundreds of mills, the throwing of thousands of mill hands out of employment, and a great increase in the price of cotton clothing—these are some of the gloomy forecasts made by cotton experts as a result of the Department of Agriculture's recent estimate that the present cotton crop will not yield more than 10,248,000 bales of approximately five hundred pounds each, writes the *Literary Digest.*

But even worse than any of these ills so far as the American Cotton planter is concerned, is the prospect that with American cotton at thirty-two cents a pound, "Australia and Messopotamia will go in for cotton raising," and, as one southern editor points out, "if every cotton-growing nation increases its acreage next year, the price of cotton will come down, and the American planter will suffer, for land, labour, and materials are all high in the United States."

When the Government estimate was made, early in November, the indications throughout the south were that this year's yield of cotton would be 47.8 per cent of normal. Last year at the same date, the total crop was reported to be 52.6 per cent of normal. In some states the crops have fallen as low as thirty-one per cent of the normal.

The chief cause of this state of affairs, it is agreed, is the incursion of the cotton boll-weevil. The cost of this pest to the American people is given in one estimate as $2.50 per capita "in the higher price of cotton fabrics that will result from its ravages". This voracious insect is also blamed for the migration of tens of thousands of Negroes northward,—though the race problem is a factor to be considered here also—and the consequent abandonment of some 2,000,000 acres of cotton land after it had been seeded early in the season.

Last year the American cotton crop totalled 9,761,817 bales, and the 1921 crop 7,953,641 bales. The world's supply of cotton at the close of the "cotton year," July 31, was but 6,400,000 bales, compared with 9,536,000 bales on July 31, 1922. The average for the past three seasons, is thereby reduced to 9,321,000 bales, against 12,300,000 average in the preceding three seasons. During the past two years, according to the figures of the National Association of Cotton Manufactures, the world has consumed about 41,000,000 bales of cotton, and has produced in that time but 33,000,000 bales. In this period the world has drawn on its reserves to the extent of some 8,000,000 bales—almost a full American crop, based on the average of the past few years. When operating on a normal basis, the world's spindles require at least 22,000,000 bales of cotton annually, whereas the world's production this year is not expected to be more than 19,000,000 bales. As the President of the American Cotton Association points out in the New York *Journal of Commerce*:—

"The carryover of American cotton at the end of the 1922-1923 season is estimated to be 3,100,000 bales by the United States Department of Commerce. This represents the smallest carryover in recent years and is dangerously near a critical depletion of stocks available to the world textile industry. The same authority shows a total world consumption of American cotton for the twelve months ended July 31 to be 12,450,000 bales. Of this American mills consumed 6,664,710 bales and 5,785,290 bales were consumed abroad.

"It is now generally agreed by leading statisticians and the best cotton authorities that the yield of the 1923 crop will not exceed 10,500,000 bales. Exports are showing a decided increase over exports one year ago for the same period, and domestic consumption will doubtless parallel the consumption of 1922. Assuming that exports of the staple will be equal to those of 1922, which amounted to 6,300,000, and domestic consumption for the same year aggregated 6,600,000 bales, we have the following situation facing supplies and demand:—

	Bales.
Carryover July 31, 1923	3,100,000
Estimated production 1923 crop ..	10,500,000
Total available supplies	13,600,000
Estimated domestic consumption ..	6,600,000
Estimated exports	6,300,000
	12,900,000
Estimated carryover July 31, 1924..	700,000

"With the world available stocks of American cotton deplated to 700,000 bales

by August 1 next year, it means nothing short of famine comparable to the almost complete exhaustion of supplies in 1865. It would mean the forcible closing down of hundreds of mills and the checking of the textile industry throughout practically every country in the world. The situation is serious and is fraught with great danger to the textile industry and the consumers of cotton fabrics in this country and abroad.

"What the hazards of production in 1924 will be with the whole South infested with the weevil menace, shortage of labour, and continued financial depression, it is difficult now to predict."

And thus, with the big surplus of cotton that was on hand when the war ended, practically used up, the world may see what the South has sometimes expected, but never seen, a practical cotton famine.

WHAT THE WORLD PAYS FOR ITS MATCHES.

A recent flotation in the United States of a large loan for the purpose of enlarging the activities of the world match manufacturing industry has led the Trade Record of the National City Bank of New York to a study of the world's outturn and consumption of matches and it estimates that the people of the world used last year 4,675,650 million matches for which they paid approximately $200,000,000.

This estimate of the number of matches used and their cost to the "final consumer" is based upon data supplied by high authorities in the match industry of the world. Figures recently published by a high authority in London put the average per capita consumption of matches by the people of Europe at from six to ten matches per day, and estimates by an equally high authority in the match industry of the United States put the average per capita consumption of the whole world at about seven matches per day. Applying this estimate of a world average of seven matches per day to the figures of world population as recorded by the Statistical Abstract of the United States, 1,830,000,000 persons, we get for the average consumption 12,810,000,0000 matches per day, or a grand aggregate of 4,675,650,000,000 as the authoritative estimate of the world's annual consumption. Equally high authorities familiar with the factory cost and the wholesale and retail selling price of this four and a half trillion matches consumed estimate the sums paid by the final consumer that at approximately $200,000,000 per annum.

Most of the four and a half trillion matches manufactured for the world markets are the products of a half dozen countries having special facilities for the production of this article of world requirement. The three requisites for successful manufacture of matches are, first, a plentiful supply of the kinds of wood suited for their manufacture; second, plentiful capital for the purchase of the ingenious and expensive machinery by which they are turned out; and, third, plentiful supplies of labour. Aspen and White pine are the timber chiefly used. As a consequence, the biggest match manufacturing countries of the world are the United States, Sweden and Japan, though Great Britain and Germany are also considerable producers, drawing their material from the Scandinavian forests where large supplies of the aspen wood are available. Japan draws the aspen used in her factories in part from her own forests and in part from those of Manchuria and Siberia. In the United States the wood used in manufacturing matches is the white pine. Russia with its plentiful supply of timber and large population was prior to the war a large manufacturer.

It is not to be supposed from the above statements that all of the world's matches are produced in the six countries named, the United States, Sweden, Japan, Russia, Great Britain, and Germany. Limited quantities are produced in other countries, and in France the industry is a government monopoly, and those acquainted with the subject assert that the cost of matches used in France is much greater than in other countries where competition holds down the price and at the same time results in the production of a higher quality of match.

About thirty-three per cent of the four and a half trillion matches consumed in the world are produced in the United States, twenty per cent in Sweden, twenty per cent in Japan, fifteen per cent in Great Britain, and the bulk of the remainder in Poland, Norway, Germany and limited quantities in China. The United States, while the biggest producer of the world, exports but a limited quantity, Japan and Sweden are the world's chief exporters of matches. Japan supplies a large part of the matches used in the Orient, especially India, China, and the Dutch East Indies, while Sweden exports largely to adjacent European countries, and also to Africa, South America and Australia. A large share of the matches made in Sweden

and Japan are of the "safety" type, while not more than one-third of the 1,500,000 millions made in the United States are of this type.

While the match is looked upon as an inexpensive article its manufacture requires a larger amount of capital in proportion to outturn than that of many other important articles. The 1920 reports of the United States Census of Manufactures puts the capitalization of the match factories of the United States at nearly $30,000,000, suggesting that the capital invested in the match industry of the world approximates $100 millions.

WEALTH EXEMPT FROM TAXES.

Remarkable growth in the increasing burden of taxation in the United States is revealed in a report made by the National Industrial Conference Board, whose research staff has spent a year in the study of the whole problem of the cost of government to the people of the United States. Side by side with increase of taxes has occurred a constant increase in the amount of property which by various means has been rendered exempt from taxation. The value of tax-exempt properties in round figures, is given as fifty-four billion dollars in 1922. "This stupendous sum," says the report, "represents slightly less than one-fifth of the national wealth of the United States and is equal roughly to one-third of all property assessed under the general property tax which forms the bulwark of state and local government finance."

Another discovery made by the Board's research staff bears out the American farmer's complaints of unfair treatment for it appears from the records that he is paying more than his share of the nation's tax bill. And as the question of taxes is going to be taken up in the political campaigns now being entered upon, the Republicans planning to offer the "issue" of reduced taxes as a bid for the popular support which will enable them to remain in office, the material bearing on this subject gathered by the National Industrial Conference Board's staff comes at a timely moment.

The people of the United States paid last year in taxes $7,061,000,000, as compared with $8,363,000,000 in 1921, $2,194,000,000 in 1913 and $1,382,000,000 in 1903. In 1922 the taxes collected by the federal government showed a decline of $1,526,000,000 as compared with 1921, a falling off ascribed to the reduction of income-taxes due to the low ebb of business in 1921.

Taxes of state and local governments also mounted in this interval, state taxes increasing from $307,000,000 in 1913 to $846,000,000 in 1922, and local taxes from $1,219,000,000 in 1913 to $3,301,000,000 last year. Briefly, the ratio of taxation to the national income was 6.4 per cent in 1913, 12.1 per cent in 1919, 16.7 per cent in 1921 and 12.1 per cent in 1922.

In 1913, the American taxpayer paid $17.07 per capita. This had by 1922 grown to $64.63 per capita, or three and one-half times as much.

In attemptimg to find out how much of the taxable capacity of the United States by virtue of legal exemption bears no burden at all, the economists of the Board made a special survey in all the states and the District of Columbia. In reaching the total of exempted property as fifty-four billion dollars, account was taken of property owned by federal, state and local governments, religious, charitable, educational and similar institutions, various scientific and temperance societies, libraries, building and loan associations, cemetaries, observatories, property of clergymen, widows, orphans, etc. Various states differ in their degrees and classes of exemption, but the Board made its calculations on the basis of these differences.

The assessed value of all property subject to taxation under the general property tax in 1921 was $128,667,000,000, and the real value $178,306,000,000. This does not represent the total wealth inasmuch as personal property largely escapes taxation. The report cites the value of all exempt real property in 1921 as $18,398,000,000 compared with twelve and a third billions in 1912, an increase of 49.4 per cent in the nine-year period. And New York, the report states, "the richest commonwealth in the union," may be taken as an example of the complete breakdown of the general property tax. The ratio of the value of personal property to the total property has steadily declined from 25.5 per cent in 1866 to 1.6 per cent in 1921.

"If to the exempt real property," according to the report, "is added the vast amount of personal property represented in the security holdings of foundations and endowments and in governemnt bonds, *viz.*, $1,000,000,000 in foundations, $1,500,000,000 in college, hospital, charitable and church endowments, $10,000,000,000 in state and

local government securities, and $23,000 millions in federal government securities, the stupendous sum of $54,000,000,000 is arrived at, the principal and income of which is beyond the reach of the tax-collecter of state and local governments."

The Board's figures further demonstrate that the ratio of taxes to income in 1913 was 10.6 per cent for farmers as compared with 4.1 per cent for the remainder of the community. By 1922 the ratio was 16.6 per cent for the farmers while that for the remainder of the community was 11.9 per cent.

HENRY FORD ON "BURNING COAL TWICE".

"By a new process Henry Ford is going to burn coal twice and get cheap gas, cheap gasoline, cheap fuel oil, cheap fertilizer, and cheap coke," writes Harold Littledale in the New York *Evening Post.*

"The gas will be suitable for illumination, the gasoline for automobiles, the fuel oil for engines, the fertilizer for farms, and the coke for furnaces.

"Where he is making 8,500 cars a day now he will be able to make 15,000. Instead of an expensive coal he will be able to use a cheap coal. And the coke that will result from the first burning will be of such a character that he will be able to make his own steel.

"Finally such a revolutionary thing is this new process that power plants all over the country must come to it. Ford engineers say, and as gasoline is derived from this method of distillation at a cost of only six cents a gallon, an inexhaustible source of cheap gasoline will be established.

"More than a million dollars has been spent by Ford already in assisting experimental work. His money has been in it. His technical staff has been in it. And at last his dream to burn coal twice has become a reality. He is now spending $5,000,000 to establish the process in his River Rouge plant at Detroit.

"As far back as 1694 men were talking of the hidden properties in coal and seeking some method of releasing them. The beginnings of accomplishment were in 1854 when the first high temperature by-product recovery plant was built in France. Since then, particularly in recent years, there has been experimentation in low-temperature distillation, as being more efficient method, but although as much as $100,000,000 was spent, a satisfactory process was not perfected.

"Analyzing these failures, Emil Piron, a chemist, and V. Z. Caracristi, a consulting engineer, who are associated in business at 43 Broad Street, evolved a method that Ford undertook to back."

Mr. Ford's own statements on the subject are to the effect that no coal should be brought up out of the ground, and that the proper way to burn coal is underground, the coke being left where it is, and the 205 chemical ingredients in the smoke being removed from it. According to Mr. Ford, 1,700 tons of coal are burned daily at his tractor plant at Rouge, and five ingredients, among them benzol, ammonia, and tar, are removed from the smoke, each ton of coal burned producing two and a half gallons of benzol, "enough", according to Mr. Ford's calculations, to pay the freight on the total amount of the coal from the distant West Virginia mines.

How to burn coal underground, draw off the gas, extract what is wanted from the smoke, and end coal mining is the object of constant experimenting at the Ford plant, and Mr. Ford believes that "there must be a way to burn coal underground." *Chemical and Metallurgical Engineering* comments :—

"The facts of the situation clearly demand a word of commendation and approval for this research, though they do not justify that undue opotimism which is so characteristic of some of the daily press statements. We need just such large financial support for the researches of low-temperature carbonization as Mr. Ford is in a position to give. Low-temperature carbonization and the utilization of semi-coke is far from that stage at which it can command general financial backing. Any one going into this work must stand ready to lose thousands, if not millions, before he can begin to profit financially from his investigations and investments. It is particularly fortunate, therefore, that a man of large means who is accustomed to ride his hobbies hard should be willing to go in at this time.

"The process Mr. Ford is investigating is one in which the finely crusht coal is carbonized by heating on the surface of a molter lead bath. This process promises very high efficiency in heat transfer from the heating medium to the coal, but the mechanical engineering problems are tremendously complicated. And there will remain, too, a question of the market value of the products, for as yet no one has clearly demonstrated just what low-temperature tars and oils are really worth in quantity."

Canadian Trade and Finance.

EFFECTS OF THE FORDNEY-MCCUMBER TARIFF.

Montreal, December 1st, 1923:—When the Fordney-McCumber Tariff Bill was passed by the United States Congress last year, certain pessimistic predictions were made with regard to the probable effect of the new tariff upon Canadian trade. Statistics which are now available for the period of twelve months subsequent to the passage of the Bill largely, dispel any fears which existed in this respect. Despite the tariff and the recovery of the Canadiaia dollar, our exports to the United States for the year ending September 30th have increased over the previous year by 26 per cent, the figures being $322,615,780 and $406,563,363. It would seem, in fact, that the only tangible result of the new bill is a relatively slight readjustment in the destination of certain Canadian exports. It was intimated in an article on the subject which appeared in our letter of December 1922, that the new tariff would particularly affect certain agricultural commodities such as potatoes, livestock, meats, dairy products, etc. This has proven correct. Exports of potatoes declined from 1,703,000 bushels during the year ending Sept. 30, 1922, to 488,000 bushels during the succeeding twelve months. Cattle exports declined from 224,000 to 161,000 head, and sheep from 103,000 to 39,000 during the same period. Other products which were rather seriously affected are apples, cheese, and fish. It is interesting, and possibly also significant to note that where exports to the United States were cut off, our exports of such commodities to the British market showed a substantial increase. Some examples of this are as follows:—

	Decline in exports to the U. S.	Increase in exports to Great Britain.
Cattle ..	62,786 head	15,966 head
Cheese ..	23,988 cwt.	14,163 cwt.
Apples ..	331,559 bbls.	20,469 bbls.
Furs ..	1,382,481 dollars	168,153 dollars
Beef ..	55,347 cwt.	15,316 cwt.

While we do not state that there is a necessary correlation between these increases and decreases, and while some of the products which were kept out of the United States by the tariff have found other foreign markets, a survey of the figures seems to bear convincing evidence that a large percentage of those goods which were affected by the tariff have found an outlet in the British market.

In the case of another group of products, the tariff was practically inoperative. One of the leading items in this group is wheat. The quality of wheat that for some years has constituted the larger part of American importations from Canada is No. 1 Northern, of which a certain amount is required by American millers for blending purposes. The 30 cent tariff has had the effect of reducing imports of our wheat by the insignificant quantity of 3,992,000 bushels, or about half of one per cent of the last year's American wheat crop. The only material effect of the tariff has been an increase in the price of this quality within the United States. Since millers have been obliged to pay this additional price for blending wheat, their flour is in a less favourable position to compete with Canadian flour, and this undoubtedly has been a factor in the large increase in exports of the latter. In the face of this situation, there are those who are pressing Congress to raise the duty on wheat 15 cents higher.

Mr. Ullal Mangesha Rau, President, Mangalore Local Co-operative Union, Ltd., Mangalore, S. Kanara, writes:—The Mangalore Guano Factory Owners' Co-operative Wholesale Society, Ltd. (No. 2715), Mangalore, S. Kanara, is an organization of fishermen of Mangalore Taluk owning Guano factories. They are spread all over the coast of the taluk. There are at present 59 members in the society who own Guano factories. These factories can produce more than 2,500 tons of Guano per season besides oil. This society works under the direct supervision of the Mangalore Local Co-operative Union. It was started on work in the year 1917. Fish Guano is one of the important manures used by the agriculturists as it produces very good crops. It is the intention of the society to supply direct to the agriculturists and planters with good quality of Guano at reasonable prices. Every attempt will be made to satisfy the purchasers with good stuff. By buying from this society the commission which should ordinarily be paid to the middlemen merchants can be saved as the suppliers are producers themselves. The purchasers will also help the poor fishermen in their industry. Orders can be sent to the President, The Mangalore Guano Factory Owners' Co-operative Wholesale Society, Ltd., "Co-operative Buildings", Kodialbail, P.O., South Kanara.

Books in Brief.

Short Reviews of Recent Books.

The Light of Ancient Persia.

By M. Pithawala, B.A., B.Sc., published by the Theosophical Publishing House, Adyar, Madras. Price Rs. 2—8—0.

This is a notable addition to the *Asian Library* issued by the Theosophical Publishing House, Adyar. It sums up clearly and succinctly the history of Parsees and Persia from time immemorial in a few chapters and outlines the work that lies before the Parsees in regard to their ancient motherland and this country, their adopted fatherland. Mr. Pithawala writes as a careful scholar and his work, short and suggestive as it is, ought to appeal to a large class of readers. The book is fully illustrated and is excellently written. It would be all the better for an Index which, we trust, will be supplied when a new edition is called for. One cardinal fact about Zoroaster is made plain by Mr. Pithawala: he favoured agriculture and based social well-being on it. Though modern Parsees are not agriculturists; this stressing of the importance of agriculture by their great religious reform shows the importance he attached to it. As in ancient India, so in ancient Persia, agriculture formed the main industry and the Persian wheel, as Mr. Pithawala so well reminds us, comes to us from the intimacy of ancient Persia with this time-honoured industry. Mr. Pithawala's chapter "Zoroaster in the Gathas" is well worth close perusal; for in it is to be found a realistic picture of Zoroaster as he is mirrored to us in the *Zend Avesta*.

A New History of India.

Mr. E. B. Havell publishes, through Messrs. Macmillan & Co., Ltd., a useful short History of India, in which the author surveys, along his own special lines, the history of India from the earliest times to the present day, emphasising the principle features of Indian political economy, art, and religious thought. The maps and illustrations have been specially prepared to show India from the Indian point of view and to explain the symbalism of Indian art. Mr. Havell's aim has been to give a condensed and unbiassed account of Indian life and thought in their many departments, containing the essential facts that every educated Englishman and Indian ought to know. He cannot be accused of the faults that too often repel both the general reader and the student of Indian history, either owing to dullness or to obvious propagandist bias. The book ought to have a wide circulation both in this country and in India, and it is published at a very low price which is an added recommendation.

Essays in Applied Economics.

By A. C. Pigou, M.A., published by Messrs. P. S. King & Son, Ltd., Orchard House, West Monster, London. Price 10*sh.* 6*d.*

Books of this kind, non-technical but thoroughly scientific in treatment, are a pleasure to recommend to lay readers of Economics. The proper application of Economic principles to current social problems is of the utmost importance to the well-being of a nation. Professor Pigou's book covers a wide range and for that very reason deserves wide attention. The book opens with an exceedingly interesting chapter on "The Private Use of Money" which is well worth study. We read in it: "Investment in the liquor trade indirectly makes necessary larger expenditure on the police force." "On the other hand," we read again, "investment in coffee taverns or other institutions designed to serve as counter-attractions to ordinary public houses, may indirectly enable the police-budget to be reduced." In the chapter on "Unemployment and the Great Slump," we read, "Nearly five years ago the war ended. Since then there has been an *interregnum* of neither war nor peace. Let the *interregnum* also end." Professor Pigou rightly insists that the thing needed to dissipate the great slump is the recovery of business confidence. Confidence cannot be restored, if the currencies of the greater part of the world remain disordered; nor is it, he adds, easily restored while political conditions are inchoate and obscure. An improvement in political conditions would indirectly help the return of confidence. In the chapter on "Some Aspects of the Housing Problem" Professor Pigou urges that carefully drawn schemes of State assistance towards housing of the poor ought not to be condemned out of hand. "They deserve", he adds, "if not support, at least sympathetic consideration." In a suggestive review of the "Report of Royal Commission on Income-tax," he remarks half humourously that it contains "hints

of devices by which he (a student of income-tax) may evade payment to the Revenue of moneys that are properly due!" To those interested in Co-operative Societies and the new theory that their income should be taxed, we would recommend a study of Professor Pigou's chapter on "Income-tax and Co-operative Societies" in this book. There are other chapters in this learned but lucid book which will repay perusal both by the economist and the general reader.

Oil-Trusts and Anglo-American Relations.

By E. H. Davenport and S. R. Cooke, published by Messrs. Macmillan & Co., Bombay and London. Price *7sh. 6d.*

This is a vigorously written book conceived in the best pamphleteering vein. The authors essay in it "to rescue truth from rumour" in regard to the alleged oil monopoly on the part of Britain as against the U. S. A. The book is divided into 4 parts :—Great Britain and Oil Power; The Oil Policy of the United States; Oil and International Conferences; Political Principles. There are three appendices to the book, one of which is devoted to the oil resources of the world and another to the annual production of crude oil by countries (from 1913—1922). Also there are two maps, one showing the oil areas of the world and another the producing oil fields of the Middle East. The authors are in favour of international co-operation in oil contract and development of the world's oil resources. They suggest that Great Britain and America should agree that co-operation should take the form of enforcing universally the principle of the "open door", not of tearing up existing legal rights. A book quite up-to-date and informing, full of facts and figures, and piquant in argument.

The Making of Index Numbers.

By Irving Fisher, published by Houghton Mifflin Co., for the Pollack Foundation for Economic Research. The Riverside Press, Cambridge, U. S. A. Price $7.50.

Mr. Irving Fisher, Professor of Political Economy in the Yale University, deserves to be warmly congratulated on the production of this great work. So well has it been appreciated that a fresh edition has been called for within five months of its publication. Thus Mr. Fisher's fear whether the book would prove a "best seller" has proved false. In Prof. Fisher's opinion the current methods of constructing index numbers—he designates them grossly inaccurate—require revision. He points out how time could be saved in the work of calculation and how best to test results. He, in fact, provides methods for measuring such elusive things as fluctuations in real wages, in exchange rates, in volume of trade, in the cost of living, and in the purchasing power of the dollar. The work bids fair to become the standard authority on the method of constructing index numbers. We would draw special attention to it in this country, for American publications are here neither widely advertised nor read.

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The Mysore Economic Journal

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of all Economic Topics of Interest

Vol. X APRIL 1924 No. 4

New Mysore Legislature.

Speech by H. H. The Maharaja of Mysore.

[*Inaugurating the new Legislative Council and Representative Assembly, H. H. the Maharaja of Mysore made a notable pronouncement. In view of the importance of the speech, we give the text of it below.*—Ed., *M.E.J.*]

Members of the Representative Assembly and the Legislative Council,—It gives me sincere pleasure to inaugurate to-day the reconstituted Representative Assembly and Legislative Council. You, gentlemen, represent an enlarged electorate, you have been returned under a wider franchise, and you start with increased powers and responsibilities conferred on you under my Proclamation of October last. You now represent your constituencies in a truer sense than ever before, and you have far greater opportunities of influencing the decisions of Government in accordance with popular demands. I welcome you to new opportunities of patriotic service, to expanding vistas of popular progress, and to responsibilities heavier than those so worthily borne by your predecessors.

I recall to mind on this occasion the words which I spoke nearly twenty-one years ago when I opened the Representative Assembly in person for the first time after I assumed the reins of Government. The hopes I then expressed of the value of the yearly gatherings of the Assembly in contributing to the well-being and contentment of my subjects have been amply fulfilled. The Legislative Council, too, which came into existence in 1907 with certain important functions bearing on legislation, finance, and administration generally, has fully justified expectations. Yet you will realize that the changes which I am inaugurating to-day are fundamental, providing as they do for a far closer association of the representatives of the people with the administration, and affording a freer outlet for their natural and legitimate aspirations than seemed possible a few years ago.

I am aware that a section of my people were in favour of further radical changes, including a wider franchise and increased powers. While fully sympathising with their ideals, I may state that our decision was made after prolonged consultation. Each State must evolve its own constitution, suited to its own need and conditions, and to the genius of its people. Without departing from the fundamental principles of development common to all forms of polity, it has been deemed necessary to maintain the character of the Representative Assembly as essentially a body for consultation and reference, as well as representation, directly voicing the needs of the people, and with a constitution sufficiently flexible to expand with the expanding political consciousness of the people, leaving to the Legislative Council the more formal work of legislation, and other functions usually associated with such bodies.

I have no doubt that you will use your new powers to strengthen all the beneficent activities in the country to spread education, to diffuse knowledge, to further industrial enterprise, both public and private, and to foster the civic virtues and the spirit of social service. More especially would I urge you to instruct the people to practise thrift, to lay by provisions and money against drought and famine,

which are such a distressing feature of our agricultural situation. With adequate previous preparation, it should be possible to combat more effectively the privations of the people such as we are witnessing in some districts of the State at the present time. The Standing Committees of the Legislature will, I hope, bring the popular representatives into closer association with the principal Departments of Government. When the projected extension of Local Self-Government comes about, and the powers of the District and Taluk Boards, Municipalities and Village Panchayats are enlarged, there will be many opportunities for men of ability to take part in public work and for the local management of local interests.

There is a certain self-discipline which lies at the root of success, and which I feel you must observe for the serious treatment of public issues. I trust that, although party conflicts will be inevitable, your discussions will be conducted with mutual tolerance and respect, and will be consistent with decorum and with the dignity of a State Legislature. A wise restraint is necessary in expressing your views. *Exaggeration and violence of speech defeat their own purpose.* I would urge you also to make a thorough study of the subjects before you speak on them and, in all your pleadings, to place the interests of the State as a whole before those of any section or class. A third point which I would emphasize is that you must keep in close touch with the Government and the people and interpret the one to the other. In this way, may we hope that the long silence of the depressed and the humble will be broken and full responsibility for their well-being shouldered by the educated and well-to-do classes.

It is the ambition of my life to see the people of my State develop self-sustaining qualities, exhibit initiative and enterprise and take a front rank in all progressive movements and activities in the country. In making our plans for the future, we have got to take note of the tremendous changes of the recent past. India, *under the beneficent guidance of the British Nation*, is shaping into a federation of Provinces and States. We, in Mysore, form, as it were, a nation within a nation. While co-operating with both the Government of India and the rest of the Indian Public in measures which lead to the prosperity of the country as a whole, we in our local sphere should promote education and economic growth to the fullest extent permitted by our resources, so that our people may not fall behind other Provinces and States in the race of progress.

That the history of Mysore in the recent past has run smoothly is a good omen for the future. We have known neither stagnation nor precipitate change. We have been advancing steadily, adapting our constitution and administrative machinery to new times, needs and aspirations. All constitutional progress related to the enlightenment of the people, and the quickening and utilizing of their energies in the business of the State. Progress of this kind has been the constant aim of the Government of Mysore. The ceremony which I am performing to-day is thus a step in a continuous and well-ordered process of development which has been going on for over forty years and it is my hope that the process will continue with the same adaptability in the future.

You will find yourselves exercising a considerable, frequently decisive, influence upon the policy of Government. Not merely your resolutions but all that you urge in debate will be of high importance. I would have you apprehend with mind and heart this vital fact that *the interests of Government and people are identical.* The happiness of the people is both the happiness and the vindication of Government. Any difference of opinion between the executive and yourselves—and such differences naturally occur, in all lands and all along the road of progress—can refer only to the means never to the end. You can count upon responsiveness and good-will in Government, as they certainly count upon them in you.

This day, therefore, marks the drawing of a new era in the history of Mysore. My faith in the power and willingness of my people to render patriotic service is firmly rooted in experience, and you may rely on my abiding sympathy with your aspirations. If every act of yours is guided by common sense, good-will and useful study of facts and of experience if your new powers are used only for the promotion of the common good, you cannot fail to rise in power and influence. You will help to build up the prosperity and reputation of our State, and will become custodians with me, of its permanent interests.

Gentlemen, in all your efforts in these directions, I wish you success and God-speed and pray that strength, wisdom and clearness of aim may ever be yours.

The British Cabinet and the Co-operative Movement.

Mr. Macdonald's accession to the Premiership gives co-operation a new aspect. There have been Ministers who were co-operators; but now the British Cabinet consists chiefly of co-operators, and many of the Ministers not included in the Cabinet are co-operators, says the "Co-operative News".

DICK WHITTINGTON left his miseries behind him, and struggled to success till he became Lord Mayor of London; but the climb of Mr. Jas. Ramsay Macdonald from his poverty-stricken, "but an'-ben" at Lossiemouth, is one of the most stimulating stories in British annals. That story was told in these pages when the results of the General Election were finally disclosed.

The Prime Minister is a member of the London Co-operative Society. He was in demand as a co-operative propagandist till the duties of the Leader of the Opposition made too great inroads upon his time. The fact that he also assumes the duties of Foreign Secretary gives hope that co-operative ideas will at last permeate the foreign policy of the British Government. Mr. Philip Snowdon, the Chancellor of the Exchequer, has, like his wife, frequently addressed co-operative meetings. Mr. J. R. Clynes, who brought common-sense into the office of the Food Comptroller, has become Lord Privy Seal, and Leader of the House of Commons. He was formerly a member of the Oldham Co-operative Society, and is now a member of the London Society. He owes much of his success in life to the good use he made of the Oldham Society's Library; and on his leaving Oldham the members of the Society presented him with his portrait.

Lord Haldane, the Lord Chancellor, has addressed the educational session of the Co-operative Congress and proclaimed co-operative ideas in education. Mr. Arthur Henderson, the Home Secretary, also a member of the London Co-operative Society, has frequently addressed co-operative conferences. Mr. J. H. Thomas, the new Colonial Secretary, is the Chairman of the Co-operative Permanent Building Society and a director of the Co-operative Printing Society. Mr. Stephen Walsh, the Secretary for War, has also spoken frequently on co-operative platforms. Mr. Sidney Webb, President of the Board of Trade, is a practical advocate of co-operation, as his many writings show. Mr. W. Adamson has been a member of the Dunfermline Co-operative Society since his marriage many years ago, and has lectured for it often. Mr. Wheatley, the Minister of Health, who is an expert on housing schemes, is a member of the Shettleston Co-operative Society. Mr. Noel Buxton, the Minister of Agriculture, has taken an active interest in Agricultural Co-operation, and is on the Committee of the Agricultural Organization Society. The appointment of these gentlemen to the Cabinet has been officially announced.

Mr. W. Graham, for many years a member of the St. Cuthburt's Society, is expected to be the Financial Secretary to the Treasury. Mr. F. O. Roberts, the New Minister of Pensions, has represented Northampton Co-operative Society at many conferences and at Liverpool Congress. Mr. W. Leach, who will probably be the Parliamentary Secretary for Air Service, has been a member of the Bradford Society. Mr. R. J. Davies, the Under-Secretary for the Home Office, is well known as an old director of Manchester and Salford and as a member of the executive of the Co-operative Employees' Union. Miss Margaret Bondfield has been a warm supporter of co-operation for many years. She is now to be Parliamentary Secretary to the Minister of Labour. Of those named for other Under-Secretaryships, Mr. Frank Hodges is a director of the Co-operative Printing Society. Mr. C. G. Ammon and Major Attlee are also enthusiastic co-operators.

In the death of Mr. J. S. Chakravarti, M.A. F.R.A.S., recently announced, we lose an old and much valued contributor to this *Journal*. His articles on "Agricultural Insurance" which appeared in this *Journal* some years ago created a favorable impression and were subsequently collected and reprinted in book form. He was an acute scholar, an able statistician and an excellent critic. He was for many years in the service of the State. As Financial Secretary, he was a great success. He was honored with the title of "Rajamantrapravina" and was until recently Accountant-General, U.P. To the last his interest in this *Journal* was real and abiding one.

The Probable Future Immigration Policy of the United States.

By Virgil Jordan.

The attempts of the Coolidge administration to offset the possible unfavourable effects on public opinion of the leasing of naval oil reserves to private interests have momentarily obscured the activities in Congress in connection with certain important international and domestic problems, most particularly that of devising a new immigration law to succeed the present Act which expires on June 30th. The Administration, however, has already drawn up certain legislation for presentation to Congress and it is likely that this legislation will pass very shortly without any considerable discussion or opposition. The Committee on immigration of the House of Representatives has held a more or less perfunctory hearing on the question, but it has long had its mind made up as to the policy to be adopted.

While this policy is, in a general way, in accord with the drift of public opinion in the United States, the bill to be presented to Congress represents in most of its details the opinion and attitude of the administration and more particularly it embodies the conclusions reached by Secretary Davis of the Department of Labour who last summer visited Europe for the purpose of studying certain aspects of the problem abroad. In this connection, it is important to remember that the Secretary of Labour represents in many respects the typical American of the present day. That is to say, he is himself an immigrant who came here as a very small child from England and rose through hard work and through long association with the American Labour movement to his present high official position. He is inclined, therefore, to be sympathetic both to the views—you might almost say prejudices—of the Anglo-Saxon element in the American population and to the point of view of the American Labour Unions. His view, while not so extreme as that of certain groups in American opinion, is highly conservative on labour union questions and on the question of immigration as well.

It is, briefly, a view that emphasizes the desirability of a restriction in the quantity of immigration in the interests of higher classes of the American workers. It emphasizes also a definite feeling regarding the superiority of certain European racial types from the point of view of American labour and social interests. For these reasons, the Secretary has been strongly impressed by certain so-called scientific studies of the effects of certain racial mixtures on the average intelligence, the proportion of insanity, disease, pauperism, criminality, etc., in the American population. These studies which are considered to indicate that several types of immigration have tended to lower average intelligence, to increase insanity and other kinds of social inadequacy in the American population are, indeed, the basis of the new immigration policy which is embodied in his recommendations. These conclusions have been subjected to a great deal of criticism and their statistical and biological validity has been strongly questioned; but like most Government officials, the Secretary of Labour and those responsible for immigration legislation have not gone carefully into the details of these questions nor have they been content to wait for fuller and more accurate investigation of these problems. These conclusions have a wide circulation and acceptance, particularly because they accord with a growing public opinion which arises largely from popular desire. The Secretary's policy, will, therefore, have wide popular support and it accords with the view of President Coolidge as expressed in his first message to Congress, which reiterated the general dictum, "America must be kept American".

It is on this very vague principle that immigration will be regulated in the future. An attempt will be made to cut down the quantity of immigration and to give preference to certain types of immigrants in accordance with pre-conceived ideas as to the desirability of certain races. This was indeed the purpose behind the present temporary immigration law, establishing for the first time a restriction by the method of quota or percentage of those of the various nationalities resident in the United States at a certain census period. This temporary law was passed with the view not only to reduce the volume of immigration but to permit the entry of larger numbers of northern European peoples. It was influenced by the fear of inundation of immigrants

after the war, especially from those southern and western parts of Europe which suffered most severely from the after-effects of the peace. It was passed at a time of industrial depression and unemployment. Since that time, although industrial conditions have vastly improved, the main conceptions behind this law were strengthened by various social developments in the United States. There has been a growing prejudice against Jews, a growing emphasis upon certain arbitrary standards of Americanism, a growing opposition to radical thought and a growing scepticism regarding the political and social environment in certain parts of Europe which constitutes the background from which a large amount of immigration might be expected to come. It is difficult to trace clearly how the various elements of public opinion have developed in the past three years but that they have grown to a point where they may be expressed in a definite immigration policy is perfectly clear to-day.

In devising the details of a policy based upon this general attitude certain problems have arisen. The chief protest which has been voiced against the present law, both by the American and foreign elements alike, has been based upon the hardships which have resulted under the quota law due to the frequent separation of families and to cases of obvious injustice which have been brought about through the limitation of monthly quotas. It has therefore been necessary for the Government, in devising a new immigration law, to find some method of improving the administration of the quota principle.

It has been repeatedly urged that immigrants be examined abroad in co-operation with foreign Governments so as to select those individuals and families who would be certain of admission to the United States. It has not been possible to get around the objections of the foreign Governments to such a system. The proposed law offers a compromise method of administration. It provides for the issuance by the Secretary of State of a definite number of immigration certificates each year, a certain portion of these to be issued every month to foreign consuls of the United States. The American consuls will be required to issue these certificates and vise the papers of immigrants in accord with certain preferences established in the law. When the number of certificates for each month is exhausted, no more will be issued. In this way it is hoped that the separation of families and the return of rejected immigrants will be largely reduced or eliminated.

In accordance with the general principles which have been described, the quantity of immigration will be limited to two per cent of the number of persons of each nationality resident in the United States as shown by the census of 1890. This will not only cut down the quantity of immigration but will still more emphasize the preference to be given to the peoples of northern Europe, since there was a relatively higher proportion of such races in the United States in 1890 than in 1910 which year is the basis of the present law. To provide further for the admission of families of immigrants as a unit, it is expected that a separate quota of two per cent will be established, under which near relatives of immigrants admitted under the regular quota will be allowed to come in.

Some of these details of the administration of immigration on the quota principle may be changed in the discussion of the legislation in Congress. Those who emphasize the hardships under a quota law may ask that all near relatives of immigrants be admitted without being counted against the quota. If the advocates of further restriction of immigration are in majority in Congress, the percentage quota may ultimately be applied not to the number of nationals resident in the United States but to the number of nationals naturalized in a given census year. Another suggestion that has been advanced is that immigration be restricted not by a percentage applied to each nationality but by a percentage applied to the total population of the United States. If industrial interests make their voice strongly heard in Congress, there may also be changes in the detail of the law so as to permit the admission of certain types of labour temporarily in accordance with changing economic needs—in other words, a modification of the present contract labour law which prohibits employers in the United States from advertising for or bringing in certain kinds of special labour from abroad.

Whatever details are finally worked out for the application of quota principles, it is clear that this principle will stand in the forthcoming law and it is likely that its application will be made more stringent than in the present law. The further restriction of immigration is assured by the present state of American public opinion. That restriction will be based more and more upon certain principles of selection.

Functions of Indian Universities.

By Sir Ashutosh Mukherjee.

I frankly confess that I do not belong to that school of critics who regard the creation of new universities with suspicion and apprehend they may prove to be possible sources of danger to the Commonwealth. Never has there been a stronger desire than at present to extend the inestimable advantages of education on sound and rational lines, never before have the resources of the universities and of the colleges been over-taxed in a larger measure. Of that insistent demand for improved and extended facilities no sane man alive can legitimately complain; on the other hand we all wish that they should be widened still further, that they should be within the reach of every man. It seems astonishing that the contrary view could be seriously maintained.

Supreme Function of Universities.

I have on other occasions emphasized the supreme function of Indian universities as institutions for the organization and advancement of research, for the systematic creation and growth of schools of Indian scholars in every department of the ever-widening domain of human knowledge. It is of momentous importance that the activities of the universities should be blended with the life of the nation, though we must emphatically repudiate the wild assumption rampant in these days of economic stress. There should, however, be a constant and legitimate tendency to mould our system of education, to satisfy the growing and varying needs of the nation. The universities now say to their men of letters "You must be leaders of men" as well as to their men of science "You must be men of affairs too". The spirit of science, the spirit of letters and the spirit of arts are three faces of the spirit of learning and no university worthy of the name can without grave danger dedicate itself exclusively to one as the greatest of the three.

Lofty Motive of Education.

Whatever difference of form and expression may prevail most persons would be prepared to adopt the lofty object attributed to education by Milton, namely, to befit men to discharge worthily all duties imposed on them. Whether in peace or in war we cannot ignore the fundamental fact that the system of national education if made too narrow and exclusive will help to cut off the nation from intellectual intercourse with other nations, will inevitably lead to stagnation and will surely prove fatal to further progress. For the progress of the race their education should be in the illuminating phrase of Prof. Campagnac 'conversation with the world', but we cannot ignore another equally fundamental aspect of the situation, namely, that the conversation must be conducted in their native idiom. We do not preach the hateful doctrine that what is foreign should be excluded from the field of education, nor the ignorant and presumptuous doctrine that what is our own is necessarily the best and that we have nothing to learn from other peoples. The root of the matter is that though things which have a universal human value are the things of most importance in education, the universal can be fully apprehended only where it lives in concrete embodiments. Consequently while we recognize and appreciate all that is wholesome in the culture of the West, we are equally concerned with the preservation and development of the organs of our national culture and civilization. It is this policy which has pervaded all the ramifications of the scheme for the establishment of a teaching and research university at Calcutta and its latest manifestation will be found in the bold attempt to reconstruct secondary education on a vernacular basis—a scheme fraught with possibilities of beneficent results which perhaps the wisest cannot foresee.

Problem of Secondary Education.

I have felt it necessary to make a passing reference to the problem of secondary education, because it is indisputable that the vitality of a university must depend on a large measure on the efficacy of pupils in the high schools. If the strongest and finest minds among our youth are to be prepared for universities the staff of our secondary schools must be composed of patriotic teachers of special ability and extensive culture. National education must be tested in the crucible of experience by its actual visible result upon national character and upon the condition of the people—if it treats youths as machines rather than as reflecting responsible beings, if it tends to enervate rather than to strengthen the mind, if it overcharges memory rather than disciplines intelligence

if it paralyses rather than invigorates the intellectual faculties.

PROGRESS AND SAFETY OF STATE.

We have on the one hand the insistent demand which makes men forget that the nation requires better education and that what will ultimately count in the progress of the race, is not only quantity but also the quality of our education. We have on the other hand an ever-increasing importance attached to examinations rather than to training. The waste of the finest human material involved in the present system is truly appalling. We have the most urgent need of competent captains in ever-increasing numbers in the eternal conflict between knowledge and ignorance, between religion and infidelity, between liberty and oppression.

Do not be deluded by the baneful fallacy that progress is inconsistent with the safety of the State, do not trust the opponents who repeat the dictum that the State rests on force. Force cannot keep a nation strong, the State rests if it wants to flourish—it rests upon our common trust in justice and in the administration of justice, in law and in the sanctity of law. The strength of the State lies in the fundamental rightness of our human nature and our undefined belief that in the long run the mass of mankind if educated would do what is right rather than what is wrong.

British Pencil Making.

The European war revolutionized many trades and industries, and in the process of a new era in the manufacture of pencils has been opened out to British producers.

It is now possible to make in large, instead of limited, quantities a pencil which is all British, from the mining of the raw material and cutting of the special trees needed for the process down to the sale of a single pencil across the counter. The whole process will be demonstrated by our manufacturers at the British Empire Exhibition. A high-grade pencil, costing no more than foreign makes, will be produced there by British workmen using British materials which have been carried in our own ships from Imperial ports to the home factories.

Before the war, the British Empire imported millions of pencils annually from Bavaria, whose export output was 450 million pencils every year. Bavaria had control of extensive cedar forests necessary to pencil making, and when war stopped her trade, America, already at that time making 8 million dollars' worth of pencils, took up the increased industry. To-day our dependence on foreign supplies can gradually cease, as in Kenya Colony we have cedar wood enough for a century. This will dispel the fear that much of the trade must remain in foreign hands, or that inferior substitute woods might have to be used owing to the approaching exhaustion of American cedar supplies.

A wholly British pencil can now be made up from Kenya cedar wood, graphite mined in Canada and Ceylon, fats and waxes produced in India and Australasia, gums from Egypt, India and the new mandated territories, and British dye-stuffs.

English should be written with a British pencil every time, and the supply of the Empire's requirements and foreign export can, if the public wills it, make employment for ten thousand more persons who would draw in wages two millions sterling per annum.

The pencils to be shown at the British Empire Exhibition will be one hundred per cent British in relation to raw material and its labour, rail and sea transportation, dock handling, home labour, skilled and unskilled machinery, capital, and sales staff.

Thus the war has put an end to a state of dependence on foreign sources, as formerly no materials, machinery, or accessories used in making the bulk of our pencils had their origin in the Empire ; and no appreciable proportion of the labour production incurred was British.

The discovery of a new fibre known as malvavisco, which is said to be a substitute for jute, is announced by the Industrial and Experimental laboratory of the Mexican Department of Commerce and Industry. The malvavisco plant grows abundantly in the humid level lands near the rivers and at present is employed in Vera Cruz for making brooms. Prolonged experiments, writes the United States Assistant Trade Commissioner at Mexico City, have shown this plant to possess qualities similar to jute and the cost of extracting the fibre to be small. The fibre has a silky appearance and has been woven into cloth with excellent results.

The Manufacture of Salt in India.

By Sir Richard M. Dane, K.C.I.E.*

Salt manufacture, especially in Upper India, has been so influenced by the policy of the East India Company and the Government of India that any account of manufacture must largely be a description of that policy. Salt has been manufactured on the sea coasts of Southern India from time immemorial. Bengal, Bihar, Assam, and Orissa have also been supplied with boiled salt made locally from sea-brine. In the interior of the country, even in the south, transportation was so costly and difficult that locally made salt, however impure, was used wherever possible. Agra and Oudh used salt made from saline earth and from brine wells in Bhartpur State and Gurgaon district, and also some salt from Sambhar Lake. Punjab was supplied partly from Rajputana and partly with rock salt and earth salt. Sind used earth salt, and some spontaneously formed salt. Central India and Central Provinces used salt from Rajputana and Bombay. In Rajputana salt was abundant.

The East India Company made the production and sale of salt in Bengal a Government monopoly in 1782. Salt was purchased from the manufacturers by agents and sold by the Government to the public. Monopoly was profitable, and the supply of a certain quantity of salt was assured. The salt was bad, but was probably as good as any previously produced. The Company's monopoly in Bengal was abolished in 1863; and since 1873–74, when stocks were exhausted, Bengal, Bihar and Assam have been supplied with foreign salt. For many years English salt was nearly 80 per cent of the total imports.

In 1801–31, in territory now the property of the United Provinces Company, an attempt was made to tax locally made and imported salt as an item on the Inland Customs Tariff. The attempt was partially successful on the Rajputana border, but the collection of high duty on earth-salt locally made was impossible. In 1834 the policy was adopted of taxing only salt, sugar, cotton, and shawls at Customs, the line being fixed near the boundary of British territory. Inland Customs Houses were abolished and goods paid duty when crossing the line. Taxation of all other articles was remitted. Manufacture of earth-salt within the line was prohibited, and in time was forcibly suppressed. After annexation, the line was carried round Punjab, and subsequently round Central Provinces and Berar.

This policy was financially successful, but in the territory encircled salt was dear, and the line obstructed trade and traffic. The Government accordingly embarked on the policy of the control of salt at its sources. Sambhar Lake was leased from Jodhpur and Jaipur States in 1869–70, and other minor sources in 1878; agreements were made with other States, which provided for the passage of duty-paid salt; taxation of salt in Bombay and Madras, which up to this time had been much lighter than in Bengal, was raised; and, when the taxation throughout India was equalized, the Customs line was abolished in 1878–79. The construction of the Rajputana-Malwa Railway, which linked Sambhar, in 1875, with Delhi and Agra, made this policy possible. When this policy was adopted, salt works in Bhartpur and Gurgaon were the principal sources of supply in the United Provinces. Rajputana was unwilling to lease Bhartpur works, and closed them, as they could not compete with Sambhar. Gurgaon works also were soon destroyed by competition with Sambhar.

Of five minor sources leased by Jodhpur and Jaipur only Didwana and Pachbhadra could be profitably worked, and the others were closed. As a set-off against this destruction of salt sources, manufacture on the shore of Lesser Runn of Cutch was concentrated in 1875 at the Government works at Kharaghoda; and Government works were opened in Sind, in 1878, near Karachi, when suppression of earth-salt manufacture was undertaken. By adoption of this policy the Government assumed responsibility for the supply of salt to Upper India. The supply was restricted to eight sources: three were unimportant, and the remaining five were under direct Government control. Sambhar Lake, with its normal annual outturn until recently of about 150,000 tons, was the most important source.

As the population increased, so the consumption increased. A supply which was sufficient for a population of 250 millions

* A lecture delivered before the Indian Section of the Royal Society of Arts on February 15.

was insufficient for a population of 300 millions. The imports of foreign salt in 1903–05 were about 450,000 tons annually. Now they are about 550,000 tons. The annual production in 1898–1903 averaged 980,000 tons; now it is 1,450,000.

The production of sea-salt in Bombay and Madras is the most important salt industry in India: sea-salt being about 60 per cent of the total output. Madras supplies mainly local demand only. Bombay is a large exporter to other provinces and native states. Administrative methods adopted in the two Presidencies were contrasted and differences in quality of salt examined. Open salt sources in Upper India were described. Until 1902 the supply of salt in Upper India was adequate, but there was no margin. In that year I raised the question of the ability of Sambhar to meet the continually increasing demands upon it. The advisability of amalgamating Bombay and Northern India as supply departments for Upper India was suggested about the same time. Investigation of the resources of Sambhar made by Sir T. Holland was reassuring. The amalgamation question was referred to a Committee composed of representatives of Bombay, Madras and Bengal and myself. Partial amalgamation of Salt and Customs at Bombay, since made more complete, blocked the formation of a strong specialized Salt Department. The majority of the Committee also adhered to the view taken in 1889 and held that consumers outside the Presidency were not likely to suffer if salt works remained under Bombay and the Government of India decided not to proceed further in the matter. The majority of the Committee and the Government of India favoured the amalgamation of the local Sind Department with that of Northern India, but this project also was dropped owing to strong opposition from Bombay. For Bombay sea-salt the Committee considered additional works necessary, as the margin between the annual outturn and the normal demand was too narrow. The Bombay Government at first agreed; but the question remained under consideration for seven years, and was finally shelved in 1912, after an unusually good manufacturing seasons the Bombay Government committing themselves to the opinion that the existing works were capable of producing in ordinary years 400,000 tons, and that the interests of the public might safely be left in the hands of the manufacturers.

After the outbreak of war the supply of English salt to Bengal was cut off owing to shipping and freight difficulties. Aden and Port Said salt took its place to some extent, but in the four years 1916–17 to 1919–20 there was a shortage of imports of about 690,000 tons. The situation was further complicated by the partial failure of manufacture at Sambhar in 1916–17. Bombay and Madras were unable to assist. For the four years ending 1919–20 the outturn at Kharaghoda was affected by bad seasons and scarcity of labour, and sea-salt failed badly. In the three years from 1915-16 to 1917-18 the annual outturn averaged 329,000 tons only. In 1918-19 production at Sambhar reached 426,000 tons; and the outturn of sea-salt at Madras and Bombay was also very large. After the conclusion of peace, imports also recovered. But during the period of scarcity there was wild speculation, and Government sources could not supply the salt which was applied for.

Energetic measures were adopted by the Bombay Government in 1917-18 to increase output both of Kharaghoda and sea-salt, but the question of how the Government can best discharge the serious responsibility it has assumed requires careful consideration. From "India in 1923," by Professor Rushbrook Williams, it appears that the policy of the Government of India is to double approximately the output of the Punjab mines amd Sambhar. As regards the Punjab mines, the policy is unquestionably right. As to Sambhar there is some doubt. The Lake is only leased; it will not be fair to Darbars to do anything which may permanently injure it. Apparently brine is deteriorating, though not at present, rapidly. Possibilities of Sind as a future source of supply should be investigated before Sambhar is over-worked.

A successful mechanical process for cutting conch shell has just been invented in India, according to the United States Vice-Consul at Calcutta. The new invention consists of an elastic composition grinding disc, which cuts through the shell in a manner much more satisfactory than any of the high speed discs of various metals tried before. This invention is of considerable importance because the shell, apart from its sacred significance, forms the basis of a large and profitable industry in many centres in India, where it is cut into rings, bracelets, and other shapes.

Currency, Credit and Trade.*

By the Right Hon. R. McKenna.

It is more than three years since the returns of unemployment first showed a distressing increase. We are accustomed to the cyclical movement in which good and bad trade follow each other in regular succession, but the duration and intensity of the present period of depression are unprecedented in modern experience. The excessive number of unemployed has been the avowed cause of a premature General Election, and the three great parties in the State have all laid stress upon the need for dealing with unemployment as a principal part of their policy. No subject is of greater importance or more worth careful study, and I propose now with your permission to say something upon it before I deal with the work of the Bank during the past year.

It is unnecessary to dwell upon those causes of bad trade with which we are all familiar. The destruction of accustomed markets through the economic break-down of a large part of Europe, political disturbance or uncertainty at home and abroad, violent changes from one type of demand to another at the close of a great war, the drain upon the essential supply of capital by over-burdensome taxation—all these are conditions gravely injurious to trade and, so long as they persist, cannot fail to retard our full recovery. If I do not refer to them now it is not because I ignore their significance but because of the limited time at my disposal. The particular influence on trade upon which I propose to speak is that of monetary policy, a matter which I believe to be of much greater importance than is generally recognized and which certainly merits close examination.

Monetary Policy Defined.

What is meant by monetary policy? Before I answer this question let me define the sense in which I shall use the word money. I understand by it all currency in circulation among the public and all bank deposits drawable by cheque. Usually when we speak of anyone having so much money we include the value of his land, securities and other property. It is a convenient form of expression, but it is not a strict use of the term. The meaning I am giving to it is confined to what is immediately spendable by the owner and does not cover the saleable value of the property. In this sense it is limited to the total bank balances both on current and deposit account together with the total of currency in active circulation.

To define monetary policy in few words, I should say that it is the policy which concerns itself with regulating the quantity of money. As I shall show later it is controlled by the Bank of England, but the action or requirements of the Government may seriously affect it. If we are to follow the working of a monetary policy and form a judgment upon its merits we must know first how additional money comes into being and how many already created ceases to exist; and, secondly, we must understand what are the consequences of a variation in the amount of money outstanding in the different circumstances which may attend the change.

How Money is Created.

Under the system which prevails in our country, there is only one method by which we can add to or diminish the aggregate amount of our money. Gold coin is no longer minted, and additional paper currency is not issued except to meet the demands of the public. When the public require more currency they draw it from the banks and deposits are reduced as currency in circulation is increased. The amount of money in existence varies only with the action of the banks in increasing or diminishing deposits. We know how this is effected. Every bank loan and every bank purchase of securities creates a deposit, and every repayment of a bank loan and every bank sale destroys one.

People often talk of money going abroad or of foreign money coming here, but as a fact, when gold is not in use money is incapable of migration. The title to money may change. An individual may sell his sterling to an American for dollars, but the American will then own the sterling in England and the Englishman dollars in the United States. If there is pressure to sell sterling the exchange value of the £ will be lowered and temporarily the burden of British payments in America will be increased. But the change of ownership does not remove the money, which necessarily remains and can only be expended where it was created. No exchange transaction, no purchase or sale of

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* Extract from the Speech delivered by the Right Hon. R. McKenna, Chairman of the Midland Bank, Limited, at the Ordinary General Meeting of Shareholders held on January 25, 1924.

securities, no import of foreign goods or export of our own can take money out of the country or bring it here. Those who wish to be meticulous may say that British travellers sometimes carry currency notes and change them in foreign countries, but the total of such transactions is too trifling to be taken into account. Bank loans and their repayment, bank purchases and sales are in substance the sole causes of variation in the amount of our money.

While banks have this power of creating money it will be found that they exercise it only within the strict limits of sound banking policy. Any one who studies the monthly statements of the London Clearing Banks will see that these banks keep a reserve of cash fairly constant in relation to the amount of their deposits. If banks increased their loans and investments the result would be to increase the aggregate amount of their deposits but to add nothing to their cash resources. The proportion of cash deposits would be reduced and, in the judgment of those responsible for the management of the banks, would be less than sound banking principles dictated. Thus a limit is placed on a bank's power of lending by the amount of its cash and, so long as the canons of conservative banking are conformed to, additional loans can only be made if this cash is increased. Banks lend or invest up to the full amount permitted by their cash resources but they do not go beyond that point.

How Bank Cash is Created.

If what I have said so far is accepted it follows that any variation in the amount of money in the country is conditional upon a variation in the aggregate amount of cash held by the banks. The next problem to consider then is the method by which this cash is increased or diminished. There are only two ways of adding to or reducing the cash resources of the banks. The first arises from the action of the public. If less currency is required in circulation and the surplus is paid into the banks, their cash resources are increased; and conversely, if more currency is required in circulation and larger amounts are withdrawn from the banks, their cash resources are reduced. There are daily fluctuations in the cash held by the banks due to this cause but the variation on this account is of minor importance. Over longer periods of time, if trade is improving or declining, or if inflation or deflation is in active operation, the difference in the amount of currency required by the public may be considerable, and the consequent reaction on the cash resources of the banks will be of first rate importance. I shall deal with this subject later on, but for the moment it is sufficient to note that the currency requirements of the public are the first cause of variation in the amount of cash held by the banks.

The second and principal cause of movement is action by the Bank of England. We have already seen that every loan or investment by a bank creates a deposit, but a loan or purchase by the Bank of England has a further effect. It creates bank cash, or in other words adds to the bank's cash resources. Let me explain how this happens. Suppose the Bank of England invests a million in War Loan. The seller receives a draft for £1,000,000 and pays it into his own bank which will consequently increase its balance with the Bank of England by that amount. Actually a million of bank cash will have been created which will become the basis of new bank loans. The repayment of a Bank of England loan or a sale of securities by that bank has the opposite effect. It cancels so much bank cash and forces the banks, unless they abandon their established rasio of cash to deposits, to call in loans or sell investments. The Bank of England may make loans or enforce repayment by modifying or increasing the severity of its terms. It may buy gold or sell gold; it may buy securities or sell securities. Every transaction of this kind leads to a variation in the amount of money in the country and by this means exercises a powerful influence on trade.

Meaning and Importance of Monetary Policy.

We can appreciate now the meaning and importance of monetary policy. Money, except the customary minimum which we carry in our pockets, is never left idle; it is always pressing for use. If there is more of it, trade is stimulated; if the amount is reduced, trade is depressed. One man may tell you to increase it indefinitely and keep trade booming. But if you do, prices will soar indefinitely. You will first suffer innumerable social evils, and finally the extreme depreciation of your currency will gravely impair your power to trade. Someone else may urge you to reduce the amount of money and bring down prices to the pre-war level or to such other arbitrary level as he happens to think the right one. Yes, and trade will remain depressed and the unemployed will be with you all the time. Moreover the burden of the National

Debt with the higher value of money will become intolerable and no Chancellor of the Exchequer will be able to balance his budget. Inflation and deflation, the whirlpool and the rocks, lie on either side of us, and if we are to avoid shipwreck the controllers of our monetary policy must steer a middle course.

I should have hesitated to discuss a matter which lies in the province of the Bank of England, were it not that I share to the full the high respect and admiration for that institution which are felt not only in the city of London but throughout the world. I disavow any thought of criticism; I am simply endeavouring to explain. The prudent policy of the Bank of England has been for scores of years the backbone of the credit structure of this country. No institution has ever been conducted over a long period of time with a more unselfish regard for the true interest of the public or with a stronger desire to maintain the highest principles of sound finance. But the Bank of England is not entirely a free agent, although the independence of the central bank of issue should as far as possible always be preserved. It is less independent to-day than before the war. It is no longer the principal authority for the issue of paper currency. It is bound to conform to the requirements of the Government and these requirements have expanded enormously with the growth of the debt and of national expenditure. The monetary policy which the Bank of England might wish to pursue may be overruled by Government necessities. All I can do, or wish to do, is to lay before you the considerations which must be present to the minds of those responsible for framing the policy.

Trade Revival Dependent on Broad Cash Basis.

I think it will be generally accepted that if the price level be unchanged an increase in the volume of trade will require an increase in the volume of bank credit and currency, that is to say, of money. The proposition stated in these general terms is of course subject to qualifications, none of which, however, really affect its essential truth. It takes no account for instance of a possible increase in the private credit given between traders, or of a quicker turnover which would enable the existing bank credit to do more work. The latter is indeed a factor of some importance, as if the banks sold part of their investment and lent the proceeds to trade, turnover would certainly be accelerated. But in present circumstances I do not think it can be disputed that a considerable improvement in trade must take place before we are likely to have any great change in the rate of turnover or any noticeable increase in private credit, and we may therefore take the proposition as it stands without dwelling further on its qualifications.

Let me repeat my statement. If the price level be unchanged an increase in the volume of trade will require an increase in the volume of money. You will observe that I say "if the price level be unchanged", a condition which makes the proposition really a truism. For if trade improves and more goods are produced, prices will fall unless there is an increase in money. Purchasers with the same amount of money will be competing for a larger supply of commodities and these conditions must inevitably bring about a drop in prices. It follows that when trade is improving and the unemployed are being absorbed into industry, if the price level is to remain stable, monetary policy should be directed to an increase in the supply of money.

We can take an illustration from current events. Large orders have been given recently by the railway companies with the express intention of finding more employment. The firms which have taken these orders will require more credit from the banks for the purpose of paying wages and buying raw materials. If the banks are to give this credit and at the same time maintain their recognized cash standards, one of two things must happen: either their cash resources must be enlarged, or they must restrict their grants of credit in other directions. But if other borrowers for industrial purposes have their credits cut down, their capacity to trade will be reduced, and we shall lose in employment in their trades what we gain in employment on the railway orders. If there is to be an increase in the total employment of the banks they must obtain additional cash resources, and this can only be effected by the Bank of England letting out more money.

The essential condition to justify an addition to the supply of money is that a greater volume of goods should be in course of production. If more workpeople are employed more goods will be produced, and we have therefore in the movement of the figures of the unemployed one of the indications which should direct our policy. We must be careful however to recognize that the unemployed returns include a certain number of unemployable and that when we get down to this residuum an additional supply of money will not be

accompanied by an increase of production. The only result will be higher prices, and a true condition of inflation will arise. Shortly stated, the argument is as follows. When national output is below productive capacity, the policy should be to let money out; when production is at a maximum, the outflow of money should be checked and, if inflationary symptoms have appeared, money should be withdrawn.

We must remember that however unpropitious trade conditions may be, human energy and enterprise are constantly striving for new markets, more effective organization, easier and cheaper processes of production. Amongst an active and progressive people trade is always trying to recover, and it will get its way even in the most unpromising conditions if it be allowed free play. But no trade can stand up against a continued decline in the purchasing power of the public. Less money means lower prices or less production or both, and orders will be withheld so long as there is an expectation that prices will fall. We have deliberately to make up our minds as to what we want. If we mean to get rid of unemployment we must have more money in existence to take up the increased production; if we mean to reduce our present amount of money we shall not escape continued unemployment.

Ups and downs in trade we are bound to have, but wise monetary policy can always prevent the cyclical movement from going to extremes. The speculative excesses of an inflationary boom and the cruel impoverishment of a prolonged slump can both be avoided. They are not necessary evils to which we must submit as things without understandable or preventable cause. They may at least be mitigated as indeed we can see from our own experience. Although we suffered from booms and slumps before the war we never had them in the extravagant degree we have since endured. There existed in pre-war days a check which though fortuitous and inadequate sufficed at least to prevent the worst excesses. That check we have now lost. It arose from our monetary system, but it came to an end on the passing of the gold standard and the introduction of the Treasury Note.

Gold as Pre-war Basis of Credit.

When we examine the actual working of our pre-war monetary system, we discover that the operations necessary for the maintenance of the gold standard had an effect extending far beyond the sphere of sound currency. The wider results may be regarded as a by-product, but the fact remains that these operations were a principal element in regulating the cash resources of the banks. I have already explained that an expansion of bank credit is an essential accompaniment of sustained trade revival; and further that additional bank credit requires an increased cash basis which can only be furnished by a loan or purchase by the Bank of England. Before the war gold was constantly flowing into London and if it was tendered at a fixed price to the Bank of England that institution was compelled to buy it. Here we had a purchase by the Bank of England creating additional bank cash and enabling the banks to make additional loans. The purchase was not made with this object in view; it was part of the working of the system with London as the world's free market for gold. But its effect nevertheless was what I have described. It is unnecessary now to discuss the measures adopted by the Bank of England to accelerate or retard the flow of gold. For our present purposes it is sufficient to observe that gold was in fact constantly coming into the country and was brought by the Bank of England. The flow of gold into London provided a potential reserve which was always available as a basis for the creation of additional credit for trade purposes.

Gold no longer Functions.

A particular feature in the working of the pre-war system stimulated the demand of the Bank of England for gold at the time when its purchase was most essential for trade expansion. If conditions were such that more currency was required in circulation the Bank of England was compelled to buy gold in order to maintain its reserve with the necessary consequence of increasing the cash resources of the banks. But mark what happens to-day. Take the conditions as we actually know them. Trade has been bad for a long time, but signs of improvement have begun to show themselves. Bank advances have increased with the inevitable result that there has been a demand by the public for more currency. We have already seen, however, that when additional currency goes into circulation, the cash resources of the banks are reduced and their power to lend is diminished. No gold is now brought as formerly by the Bank of England and unless that institution makes additional loans or investments, there is automatic throttle on the expansion of bank credit and the trade revival must be brought to a standstill.

In present circumstances, therefore, it is only by wise action on the part of the Bank of England that the restriction on trade revival can be removed. The increase in bank deposits during recent months shows that monetary policy has been directed to creating the additional money necessary to carry a larger volume of production. Although external conditions have shown no amelioration trade has been improving, and had this policy not been adopted the growth of deposits would soon have been arrested for want of a sufficient cash basis and the revival would have been checked. In existing conditions conscious policy is necessary to achieve the results formerly produced by the machinery of our currency control.

In the working of our credit system it would simplify matters if the right of note issue in England were again placed exclusively in the hands of the Bank of England, and for my part I would gladly see this done. I would go further and extend the monopoly to cover the whole of the United Kingdom, though I know this would raise the question of compensation to the Scottish and Irish banks, which now use their own notes. The amount and conditions of what is called the fiduciary issue would have to be settled, and there might be a difference of opinion as to whether this sum should be fixed or should vary with the amount of gold held in the Issue Department of the Bank of England. A competent Committee, however, could be trusted to come to a right conclusion on this important point. In other respects I see no reason for thinking that the change would present any very serious difficulty. The reasons which existed in 1914 for issuing currency notes instead of extending the Bank of England's right of issue have no longer any weight, and we are not now concerned to determine whether those reasons were good or bad.

Monetary Inflation and Productive Credits Distinguished.

Before I conclude this part of my address let me make one further observation. Many people look upon any increase in the amount of money as inflation. They fail to observe the distinction between the different kinds of bank loans which create additional money and denounce them all in one sweeping judgment. When a Government shrinks from raising sufficient revenue by taxation to cover its current expenditure and makes good the deficiency by borrowing from banks, I agree that inflation of this kind deserves unqualified condemnation. It leads to a depreciation of the currency, and I need not dwell upon the social and commercial evils that must befall a nation in these circumstances. But a bank loan to a manufacturer or merchant, as the result of which more goods are brought into existence and placed upon the market, is on a different footing. In the first case the loan remains outstanding after the proceeds have been spent; in the second, when the goods have been produced and sold, the money received for them is available for repayment of the bank loan, or, to use a common phrase, the loan is self-liquidating. There is a distinct limit however to the justifiable creation even of productive credits. As soon as there is sufficient money to carry the full volume of production of which the nation is capable, no more should be created and the repayment of past loans should balance the extension of new ones. I hesitate to apply the term inflation to additional trade loans of this nature because of the evil associations of the word; but whatever name we give to this expansion of credit, it is indispensable to the proper functioning of our commercial system and is imperatively needed when trade is depressed and unemployment general.

The Motor-Car Population of the World.

In January 1923, we were told there were 14,507,000 motor cars in the world, an increase of nearly 2,000,000 in twelve months. Of these America had 10,794,000, or 84 per cent of the world's total. America had one car for every nine persons, Great Britain one for every 85, and China one for 42,784. This last statement we would imagine at first sight was either open to correction, or else China had shrunk very much of late as regards her population, which is surely something over 400,000,000 souls. As, however, it works out at some thing less than 10,000 cars for the whole area of China, one must take our American cousin's return for what it is worth until we can go to China and count the cars for ourselves. One wonders how many there are in Russia at the present time—that is, cars in actual working order.

Co-operative Banks and their Uses.

By F. W. Strack, F.A.I.S., F.C.I.S. (Eng).*

This subject is much in the air now-a-days, and it is as well for men on the land to know something about the matter, for such banks are designed solely in their interests.

It is beginning to dawn upon the farmer that he has not been getting that fair deal in financial matters that he is entitled to. Honest men will admit that it is only through the hard work of the men on the land that any work at all is available to men in our cities. Sixty-six pounds out of every £100 of our Australian national wealth is supplied by primary producers, yet the Savings Bank in 1921 loaned only £20 in every available £100 to men on the land, while the trading banks probably did no better; therefore the time is ripe for more assistance and consideration to be given to those producers, and at the moment politicians in every state are falling over each other to assure the farmer that Codlin is his friend and not Short. They are talking loudly for helping him with loans and all sorts of financial schemes are in the air, but all to be under control of red tape Government departments.

Now all this is the experience of other countries, and the only really successful efforts to help the producers has come from the men themselves, in some form of co-operation. This has taken the form of Co-operative Banks, and we will proceed presently to inquire as to how these institutions are worked and how they meet the long-felt want of those who produce so much of nation's wealth, and yet who do not get the proper financial help at the proper time. The system of loans that can be called up at a moment's notice is the worst that can be devised so far as farmers are concerned.

The trading banks do not, and cannot, lend on long terms. In Australia we are subject to periods of drought, when crops fail and stock die. But these troubles pass in time, yet it often happens that in the very midst of one of these trials money is "tight", or the loan the farmer has from his bank is called up, and he is at once in financial straits.

This is all wrong, and the only remedy is some arrangement whereby he shall be tided over the bad times; this remedy lies in the long-term loan. We are rather prone in a young country to try to get rich too quickly—we want to buy our farm and add acre to acre and clear it of all debt in one life-time, whereas the next generation should be required to do its share. Again and again we see a man working like a slave, year in and year out, struggling to have his farm free to hand down to his children. He sacrifices himself, and his wife does the same, for years, but when he passes away his son takes life much more easily. He discards father's old spring cart and buys a motor-car forgetting the long and weary struggle his parents have made in their efforts to pass down the property free of debt.

The long-term loans would distribute the work, the worry, and the debt a little more evenly, to the advantage of each generation.

Many European nations have grappled with the problem, and have gone a long way to solve the difficulties of financing the men on the land. The main lessons to be learned from a study of the world's land credit systems are the tremendous benefit to farmers of long-dated loans, and the ease with which money can be obtained by the issue of debentures secured by the solidarity of groups of landowners, or by the assets of a co-operative association properly supervised and carefully managed.

The only successful co-operative associations for long-term credits in other parts of the world are those where the only members are borrowers. Experience of many years and in many countries proves that such associations are the best for obtaining long-term loans at low rates of interest and on easy terms. The association issues debentures, and in exchange its members—the borrowers—give it a mortgage over their property.

A co-operative society such as a village bank or people's bank of a European country is an association of individuals, and not a combination of capital. It rests on self-help.

Speaking generally, the European Co-operative Banks have from 50 to 150 members, who buy one share of about £2 10*sh.*, paying for it by instalments spread over two years. Where no shares are issued the members are jointly and severally liable for all debts of the association. In case of loss, a creditor can sue any one of the members whom he

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* Part of an address delivered before the Convention of the Chamber of Agriculture, held at Hamilton (Vic.). We owe the report to the courtesy of the "Queensland Agricultural Journal".

thinks can pay, and he can take them in turn until his debt is satisfied. But as there are no shares the reserves grow steadily, and it is very rare that any individual member is called upon to pay the association's debts. In these societies outside deposits are not always taken, and the security required for loans is much like that of the ordinary trading bank, except that the character of the applicant is taken into account, so that under proper safeguards a loan may be made to a person with no property, but whose asset is a good character.

Now, in a new land like ours we move about from place to place more than they do in the older lands, and our lands do not so often remain in one family. This has the effect of making us more careless of our character and of our probity. In the result, therefore, personal character here is not usually an asset available as security for a loan.

The European farm mortgage is generally from ten to seventy-five years' duration, equal instalments being paid with interest quarterly, half-yearly, or yearly. The rate varies according to circumstances, but from ½ to 1 per cent is added for a sinking fund, when periodical repayments are made. These sinking fund amounts are reinvested with the society, and, of course, carry interest.

In France, true amortization is the rule, that is, so much principal and interest is payable at stated intervals, so that as principal is paid off interest payments decrease until finally the last payments include scarcely any interest, but mostly principal.

In European associations a custom is growing up for borrowers to take out a life insurance policy, which the society holds against long-term loans, so that if the borrower dies, the debt has not to be carried on by his descendants.

Co-operative banking is making headway in British India, and wherever established, these banks quickly stamp out the awful usury that is so prevalent in India. What militates against their more rapid spread is the inordinate love of the native for hoarding gems and ornaments. Since time began he seems to have a craving for precious stones and metals and seeks to obtain them even though he may be living in the greatest squalor and poverty.

The associations have either limited or unlimited liability of members, and where the liability is limited no member may hold more shares than of a face value of Rs. 1,000 (about £70). After devoting quarter of the profits to reserve, the remainder may be divided. Where the liability is unlimited, all profits go to reserve until it reaches a certain percentage of the liabilities outstanding.

Neither class of association takes deposits from non-members or lends money to them. Most of them buy and sell for their members in addition to doing all their banking.

In Japan, mutual assistance amongst farmers is a practice as old as amongst Europeans. As a rule their co-operation is for the sale of produce and the purchase of requirements but pure co-operative credit societies number over 10,000, with a membership of over 1,000,000. Just before the war the rates of interest were excessive in Japan, and the co-operative associations granted from 6 to 13 per cent for deposits charging from 12 per cent to 18 per cent for loans.

As 87 per cent of the farmers of Japan keep a family of four or five on the produce of less than 5 acres, it is a marvel how they can pay such high rates for monetary assistance.

In Ireland, in 1918, there were 236 rural co-operative credit societies but sixty of them were practically moribund, and no progress has been made since.

Neither in England nor Wales does rural co-operative credit show much vitality. The reasons assigned for the slow growth are the reluctance of the farmers to borrow, and so exhibit their financial needs to their neighbours and they do not like the idea of unlimited liability.

In Scotland, up to a year or two ago at any rate, the idea had not caught on, mainly because the ordinary banks afforded more facilities to the small man than in any other part of the empire. May I venture to suggest that no Scotchman would appreciate his neighbour knowing all about his financial position, though perhaps he is not averse to knowing his neighbour's affairs.

In North America, the first co-operative bank was started in Quebec, in 1900. Its first receipt was the sum of 5*d*. By 1914 its assets equalled to £61,000. Of its 7,200 loans, about 1,200 were for £2 or less, and none exceeded £20, while it has never lost 1*d*.

A very large number of these People's Banks sprang up in Quebec, and they now have about 25,000 shareholders, with 10,000 borrowers, with loans of from 5*sh*. to £200, aggregating over £500,000, and averaging £52 per loan —total capital £200,000.

These banks raise their capital by selling shares at £1 each, in instalments. They deal

very little in mortgages, but lend mostly on personal security.

In other parts of Canada, seven years ago, several of the Provincial or State Governments took power to provide money for loans to farmers.

In Nova Scotia the Government will assist in rather an unusual way. Thus, if a loan company advances a farmer 80 per cent of the value of his property, the Government will guarantee the loan company to the extent of 40 per cent of the value, but repayments must go in reduction of the Government guarantee. Loans for machinery and plant are freely granted, and have proved a great boon to farmers.

In New Brunswick the Farm Settlement Board has power to buy and sell real estate and personal property for *bona-fide* settlers. The Government has power to raise Loans in order to supply the Board with funds.

In Ontario, under the Farm Loans Act, the Government lends funds to any municipal corporation, which in turn lends it out to farmers in its district, but at least half of each loan must be for permanent improvements. The corporation takes a debenture for each loan, and the debenture is held by Government. A special rate is levied on the particular property to meet the annual interest and sinking fund.

The loan must not exceed 60 per cent of the value of the property and under certain conditions the loan may be repaid at any time.

In 1919 the Government lent about £1,000,000 towards the purchase of seed, machinery, live-stock, buildings, creameries, mills, etc.

Many other parts of Canada have their People's Co-operative Banks and in the United States there are numbers of Federal Land Banks or Farmer Loan Associations; these must have a minimum capital of £150,000 before the law allows them to start. Loans from the Bank run from £20 to £2,000, borrowed only by members. The term is from five to forty years, repayment being on the amortisation principle; that is, fixed regular payments of principal and interest.

With all of these associations, however, the Government has a finger in the pie, and there is the usual red tape, with all its vexatious accompaniment of delay, expense, and want of human sympathy.

In conclusion it appears that co-operation in farm loans to be successful must have—

Undoubted means of ascertaining the value of the property.

Low legal expenses.

Economy in working the institution.

Safeguards for the lenders.

Restrictions against thriftless borrowing.

Reduced to a few words—the system of co-operative banks can be explained as associations of producers lending their own money to each other on long easy terms, assisted perhaps by outside deposits and Government loans.

Farmers usually have little idle cash, as they can do better with it on their farms. The Co-operative Bank attracts them rather than the ordinary bank, because it is far more economical, and profits do not leave the district to go out of the country. Moreover, the Co-operative Bank attends to all his financial dealings, whether sales, purchases, or investments, particularly in insurance in all its forms; above all, it helps to eliminate that parasite—the middleman.

As to long-term loans—the only danger is the temptation to borrow unnecessarily owing to the day of reckoning being so far off, but there are two classes of farmers that it is a boon to—the young man and the old—the young man because it enables him to make a start on virgin land, and to buy the property out of the annual produce of the soil; the older man, because having pioneered and borne the heat and burden of the day, he can use a larger portion of his income for his own comfort in advancing years, leaving the next generation to do its share of paying for the property.

In Central and South America there is enough of Pita Floja growing wild to supply 500,000 tons yearly. It is claimed that a Columbian once tried to dispose of 50,000 acres in the Province of Bolivia. On investigation, however, it is found that the entire tract was densely covered with *Pita Floja* and therefore useless as the land was not worth the cost of clearing and there was no machine to turn the plant, which is quite a pest, into fibre. The *Pita Floja* grows so densely, and the book-shaped thorns on its edges are so sharp that it is impossible to penetrate the forests, but should it become possible to decorticate the plants and utilize the fibre it might pay to do so, especially until Russia again becomes an important producer of flax as in 1915, when her crop approached 750,000 tons. The particulars given go to show that: 1 lb. sisal fibre binder twine—500 ft.; 1 lb. manfla fibre binder twine—650 ft.; 1 lb. pita floja binder twine—980 ft.

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Department of Industrial Studies.—Mary Van Kleeck, Director. The aim of this department is to study industrial conditions and to discover facts which may be a guide for public opinion and a basis for constructive action for improving conditions of work and industrial relations.

Department of Recreation.—Lee F. Hanmer, Director; Clarence A. Perry, Associate Director. The aim of this department is to aid in constructive social organization of leisure time. The department studies the best methods of providing and administering facilities for public recreation and encourages their adoption by public and private agencies. Some of the subjects dealt with are recreation, legislation, athletics and games for school children, community use of school plants, holiday celebrations, municipal administration of recreation facilities, and rural recreation.

Division of Remedial Loans.—Caro D. Coombs, Secretary. The aim of this division is to conduct a campaign of education regarding the evils of the small loan business and to urge the passage and enforcement of adequate small loan laws.

Department of Statistics.—R. G. Hurlin, Director. The aim of this department is to prepare statistics reports relating to social conditions, to advise the members of the staff of the Foundation and others as to the planning of statistical inquiries, the preparation of schedule forms and tables, and the presentation of statistical results. It revises all statistical material intended for publication by the Foundation.

Department of Surveys and Exhibits.—Shelby M. Harrison, Director ; E. G. Routzahn, Associate Director. The aim of this department is to study and develop the social survey and social exhibit as important aids in community improvement, and to give advice about,

make plans for, and help in organizing local surveys and exhibits.

Library.—Frederick W. Jenkins, Librarian; Bertha M. Hulseman, Assistant Librarian. The library is free to the public and is open week days from 8-45 A.M. to 5 P.M. It contains about 22,000 books and 61,000 pamphlets on sociology and social work. Its files of reports of public and private agencies, institutions, and conferences, national and foreign, are unusually complete. It receives regularly 250 periodicals.

Capital-sharing in the United States.

There is a striking article in the most popular of American weeklies writes a correspondent in *the Times*. It describes the remarkable change which is in process in the widening of the holding of capital in large industries. It points out that the change involves a fundamental difference in the conception of thrift. Once one understood by thrift a balance at a bank, probably a savings bank. Now it means what is, to all intents and purposes, a debt.

That is to say, the worker has had an advance which enables him to purchase shares in his own industry. In some cases there is a joint fund, of the nature of a labour bank, to enable the worker to hold shares in a number of differing industries, including the industry in which he gets his livelihood, but spreading his risk. This movement has grown with enormous rapidity. Large industries use their reserve funds for this purpose and devise schemes whereby the workers may become stockholders and thus acquire a very real interest in the industry of which they have a part.

The Armour Beef Company has issued a circular showing that what is usually called a "trust" has really a deep foundation in stock-holding by its workers. Out of 77,000 stockholders no fewer than 40,000 are employees. Figures of a similar kind are issued by the American Telegraph and Telephone Company. Smaller industries adopt the same means, but up to the present it is more suitable to what are called "public utilities", the local tramways and electric power ventures have adopted it generally. Their rates of interest are controlled by public service commissions, and these commissions view with approval the attempts to advance money to employees at a rate of interest rather lower than that paid to stockholders, so that the difference makes investment of this kind quite attractive.

Remarkable Figures.

In connection with this movement some remarkable figures have been gathered by an agency which sets out to encourage these schemes. It is stated that if the total capital of the chief industries is divided by the number of employees it amounts to about 800 dollars per head. Thus the possibility of joint-ownership is seen at a glance, and the idea of a dominant capitalism is checked at its source; there can be no doubt that it is a dangerous idea. Probably the labour banks will do even more to check it, though the moral advantage of corporate ownership of various stocks is not so great as the personal ownership in the industry in which the owner is employed. It is on this point that the discussion centres at the moment. On the one hand there is the moral advantage; on the other hand there is the additional risk which is imposed by "all the eggs in one basket".

The bearing of this development on labour organization is an important matter. The organizations in the United States are not so hostile to this development as English organizations are to profit-sharing and similar schemes. The reason is not far to seek. The American worker looks askance at systems which put him in a separate class in respect of holding stock. He wishes to be an ordinary stockholder. Oddly enough, he does not seem to wish to exercise all the rights of an ordinary stockholder. He is slow to put his shares on the market, and there is ample evidence that he is not in the least interested in changes of price. Nor does he wish to avail himself of controlling rights, such as voting.

If there were a change in these tendencies it might introduce complicating factors, but there seems to be no indication of such a change. Efforts to encourage profit-sharing on the lines of special share certificates have not succeeded in America any more widely than they have succeeded in England, but the new development seems to be moving rapidly along. It may mean something near to a social revolution, for it indicates a total change in the attitude of the worker. Nor is it only the high-skilled worker who is concerned. All sorts of workers avail themselves of the opportunity of cultivating the "new thrift". There is plenty of room for investors in new enterprises. This movement comes in at what we may call the secondary stage, but it is none the less of value on that account.

Russian Monetary Conditions.

After six years of economic and political chaos, there are definite indications that the Russian nation, or more properly the new Federation of Russian States, will presently resume something of her former commercial prestige in the family of nations. Within recent months trade delegates have been sent forth from Moscow to the world's leading centres, to facilitate the re-establishment of commercial relations, while Russian imports and exports once more are beginning to figure in the international balance sheets.

The foundation for the industrial and commercial rehabilitation of Russia was laid in October 1921, when in accordance with the new economic policy which was adopted at that time, the State Bank of Russia was established. The reversion to a capitalistic regime which involves private ownership and the accumulation of wealth, necessitated the organization of some sort of banking system—a thing which for two years had been utterly lacking. During the first year of the State Bank's activities, operations were carried on with a species of paper-note, based on rouble value. The necessity of a stable currency, however, became increasingly apparent, and to this end, gold and foreign currency began to be accumulated. In October 1922, a sufficient base for a new currency had been acquired and the State Bank was empowered by the Soviet Authority to undertake the issue of notes. The first step was to introduce a new unit of currency, 'the chervonetz', which is equivalent to 10 gold roubles or $5.14\frac{1}{2}$. It is provided that the currency shall be backed to the extent of at least 25 per cent by gold, precious metals and stable foreign currencies, while any balance not so covered is to be backed by a short sight bills and advances secured by readily realizable goods, with margin. In order to put the new circulation into general use, it was made acceptable at its nominal value for the payment of taxes and duties, and in all cases for which the law requires the payment of gold. The issue of notes is entrusted to a special emission department. The notes are not convertible into specie, but it is the stated intention of the Government to resume gold payments, at some future date.

Since the establishing of the new State Bank, and especially since the provision for the issue of Bank notes, the financial structure of the country has rapidly gathered strength. According to the August 16th statement of the Note Issue Department of the State Bank, the total amount of gold, silver, foreign bank notes and dollar and sterling drafts amounted to 8,351,389 chervonetz, against a total note issue of 15,900,000 chervonetz. In other words, while the law requires that notes be secured to the extent of 25 per cent, the actual security in gold equivalent was 53 per cent, and the total assets of the Note Issue Department, exceeded 16,926,000 chervonetz. Quotations of the chervonetz listed on the Moscow Stock Exchange in August showed a depreciation of about 9 per cent in terms of gold, which is singularly strong position in comparison with that of many other European currencies.

With the gradual development of the State banking system, which has now more than 100 branches, there has been a steady increase in the number and strength of the private and co-operative banks. The Industrial Bank, the Russian Commercial Bank and the Moscow Municipal Bank are among the largest financial institutions next to the State Bank.

The fundamental changes which we have outlined in the economic structure of Russia are deeply significant. They imply the abandonment by the Government of certain of their once most cherished monetary principles, freedom from which was the first step towards industrial and commercial recovery. It would seem, moreover, that this recovery has proceeded farther than is generally known. Agriculture especially has made important advances towards normal conditions. Total exports of grain from the 1922 crop amounted to some 722,749 long tons, presumably after domestic requirements had been provided for, and the grain acreage this year is reported to be approximately 20 per cent in excess of that of 1922. These various evidences of improvement in Russia's basic industry, and in the financial structure of the country, indicate that Russia's return to a position of international importance commercially will not be greatly delayed.

The Italian silk yield in 1923 was 4.9 million kilogrammes.

Education in India.

The progress of education in India during the quinquennium 1917-1922 has been issued in the eighth quinquennium review by Mr. J. A. Richey, Educational Commissioner with the Government of India. The review provides reading material of exceptional interest, because it was, during this period, that Non-Co-operation affected educational institutions and a change in the educational policy constituting a landmark in the history of Indian education was inaugurated. The review says :

A Flood of Enthusiasm.

There is no lack of incident or variety in the history of Indian education during the last five years. Opening with a flood of enthusiasm, which would have swept all children of school-going age into school, the period closed with an ebb of reaction and doubt which sought to empty the schools of even their voluntary attendance. The forces behind both these movements were political feeling. That the chief obstacle to India's progress towards complete Nationhood is to be found in the illiteracy of her masses first found expression in Mr. Gokhale's Primary Education Bill of 1911. It was brought to a head by a declaration of the Secretary of State in August, 1917, that India's future lay in the progressive development by successive stages of complete Self-Government. Responsible Indian thought realized that the rate of progress from a bureaucratic to a democratic form of Government must be largely dependent on the evolution of a popular electorate, capable of exercising franchise and so ultimately on the rate of expansion of literacy among the masses. Expansion under a voluntary system of education was proving a slow and uncertain business. The solution appeared to be the early introduction of compulsory education, and Education Acts, with this object in view, were introduced in rapid succession in the seven major Provinces of India between February, 1918 and October, 1920. The nature of these Acts and the causes which have conspired to render them hitherto almost inoperative are also discussed. It is possible that they would have proved more immediately effective had they limited their aims to the enforcement by local bodies of the obligation to the Province's educational facilities for all childern of school-going age, that is to say, if compulsion had first been exercised on the local body and not directly on parents. But the feeling which prompted the promoters was sound and even if the new Acts may need amendment in the direction indicated as the Government of Bombay has already realized, they constitute a landmark in the history of Indian education.

Political Unrest.

Continuing, Mr. Richey observed that the introduction of these Acts was followed by a period of political unrest brought about by the appeal of Non-Co-operation and economic distress engendered by the War. A large number of students who responded to the appeal did so under the impression that they were thereby, in some obscure way, serving their country. The power of appeal was strengthened by a very genuine discontent with a course of education which appeared to lead to nothing, but the acquisition of a Degree, an honour no longer worth the money sent in obtaining it. The political appeal was thus supported by economic conditions. The year, 1921, thus saw an out-crop of a large number of National Schools ranging from a Muhammadan University at Aligarh to Municipal primary schools at Surat. Mr. Richey says that, provided the new National Schools did not interfere with the work and discipline of the existing institutions, the directors and others interested in education would have welcomed what purported to be the inauguration of a new educational experiment ; but Mr. Gandhi insisted on the spinning wheel and education in the vernaculars. As for charka, its early disuse is explained by an elementary knowledge of child nature. Moreover, the economic value of the charka may be great. Its educational value is negligible. As for education in the vernaculars, the Directors, as far back as 1854, laid emphasis on imparting education in the vernaculars, but even in the lower stages of education the tendency has been to lay too much stress upon English, because of its great practical use as a medium or *lingua franca* in a land with 140 vernaculars. The dearth of vernacular literature, due to the lack of reading public, is a serious handicap to the encouragement of literature among the masses.

Lessons of the Episode.

This episode in the history of Indian education is closed. It has not been without its valuable lessons to the educationist. It has brought to light evidence of genuine

dissatisfaction with the processes of education in India. It was due to politicians that the attack was directed against the system of educational administration and because the system, though capable of improvement, is, on the whole, suited to the country, the attack failed, but strength was added to the attack by underlying discontent with the character of education provided under this system. For this discontentment it would appear in subsequent pages that there is some justification. It is probable that a large bulk of students suddenly realized to their intense pain and disappointment that much of their education is ill-suited to their practical needs. While the Professor was lecturing to them on the annals of the Holy Roman Empire, their thoughts were inevitably and irresistibly turned to the great Liberal and National movements of the Nineteenth Century. In economics, they desired to study the application of general principles to the problems of their own country, instead of to those of distant lands. Students, both at the school and at college, began to wonder whether they were being trained for life and for service, or for the mere success in examinations, for it was the ideals of service that were uppermost in their minds. In short, the educational organization of India emerged triumphant from the ordeal but the crisis has left behind the conviction that our educational aims need re-statement. If the function of education is the adaptation of the future citizen to his environment, then the system of education must change in harmony with the changes in that environment. The political and economic conditions of India have been undergoing a change and the National School movement can, at least, claim that it lent strength to the advocates of educational effort.

Vocational Studies.

Mr. Richey next points out the difficulties in the introduction of vocational studies and lays particular stress on different Provinces co-operating in respect of introducing professional and technical education.

A Uniform Standard.

He further emphasizes the value of proceeding by plan and the great need of different Provinces maintaining the same standard of education as in the past while the subject of education is being provincialized. He was against any University or Province adopting a lower standard of qualification, and believes that the new University system would be conducive both to better education and research, provided the old high standard of education is adhered to and all Universities maintain almost a uniform standard of qualification. He quotes the opinion from the Provinces of the Punjab and Assam urging the need for the Central Advisory Agency, which would act in the wider interest of India without unduly interfering with the autonomy of the Provinces.

Educational Control.

The existing distribution of educational control, as a result of the Reforms, between the Governor, the Executive Councillor and the Minister, is commented upon and attention is drawn to the fact of engaging Indians on a much lower scale than those fixed for the members of the I.E.S. This question is, however, under enquiry by the Royal Commission.

Women's Education.

Statistics regarding women's education were not remarkable and the problem of European education remained unsettled as did, indeed, the many problems concerning the future of the Anglo-Indian community. On the other hand, the Muhammadans showed a very satisfactory increase, though this was, in part, accounted for by the establishment or recognition of special Muhammadan Schools in Sindh and the United Provinces. These schools serve, in the first instance, to attract Muhammadans to secular education; but if allowed to detract the community from giving its children the better education provided in public schools they are a doubtful boon.

Battle with Illiteracy.

Concluding Mr. Richey observes:—The quinquennium does not disclose much change in the content of primary education. Nor taking India, as a whole, does it record any general advance in the battle with illiteracy as ascertained at the census of 1921. The number of literates in India was 226,23,651 (1,98,41,438 men; 27,82,213 women), or, in other words, 72 per mille (122 in the case of men and 18 in that of women). These figures show a slight improvement since the census of 1911, when the number of literates in India was computed to be only 59 per mille *i.e.*, 106 for men and 10 for women. But they are less then might be expected. From the numbers under instruction one lesson may, perhaps, be read from the provincial reports, the advantage of proceeding in accordance with a carefully devised plan.

Only the adoption of such a plan can ensure equalization of educational opportunity and guarantee that such provincial funds as are available are used to the best advantage. The straightened finances of the Central and Local Governments of India at the present time preclude any hope of striking educational developments in the immediate future. The new Provincial Ministries of Education, after successfully combating the attack on their schools, are now taking stock of their educational position, with a view to systematic advance when necessary funds are forthcoming. In such an advance it is evident from the keen interest shown by the new Councils they will have the support of public opinion. The one lesson the history of the last five years has taught us that if changes in the Indian educational system are needed, they must be introduced gradually to suit the changing conditions of Indian life. There is no short cut to educational reforms.

Greek Mercantile Marine.

It is reported from Athens that negotiations are shortly to be opened there with a view to the conclusion of a commercial agreement between Greece and Soviet Russia (says the *Journal of Commerce*). Greece is particularly concerned about the development of her maritime traffic with South Russian ports, and she is asking that Greek ships calling at Soviet ports shall not be subjected to excessive taxation. A good feeling appears to exist on both sides, and it is specially noted that the Soviet authorities have recently returned to Greece the three steamers, *Sia*, *Aghios Dimitrios* and *Dorothea*, which were seized a couple of years ago in the Black Sea.

A further report from Athens says that two Greek steamers have just been transferred to the Turkish flag. These are the *Elian* and the *Iona*, formerly belonging to the Greco-Anglo-Belgian Company, of the Gulf of Smyrna. This company, it is stated, has been purchased by Sadik Bey, the father-in-law of Mustapha Kemal Pasha. The ships in question have been renamed Mustapha Kemal and Smyrne. Sadik Bey has also bought a third steamer, the original name of which is not mentioned, but which will henceforth be known as the Nouvelle-Turquie.

According to the Piræus correspondent of the *Journal de la Marine Marchande*, the policy of Signor Mussolini in regard to Greece has done considerable injury to the Commerce and Maritime traffic of Italy with the Hellenic kingdom. The exports of Italy to Greece amount to not less than 2,000,000,000 of lire per annum, while Greek exports to the Italian Peninsula amount to only about 100,000,000 lire. At the present time, says the correspondent, the Greek commercial world, despite the advice of the Government, has practically ceased commercial transactions with Italian houses. The Chambers of Commerce, however, have pronounced against the maintenance of this boycott of Italian products, but in spite of this several big importing houses at the Piræus have cancelled large orders.

On the other hand, such Italian ships as have resumed their voyages to Greece are only doing very insignificant traffic with that country. Mention is made, for example, of a steamer belonging to the Lloyd Triestino which arrived at the Piræus from Trieste at the beginning of October with only two passengers, while another vessel belonging to a Brindisi firm landed no passengers at all, and only one ton of merchandise.

The following definitions have been adopted by unanimous resolution of the Council of the Silk Association of Great Britain and Ireland:—(1) Silk means the natural product of the silkworm, whether net silk or spun silk; (2) woven or knitted textiles and articles made therefrom—silk goods may only be so called if they contain no other fibre than silk. They may be further qualified as pure silk goods if they contain no tin weighting and no added weight of any kind other than that which is an essential part of dyeing and finishing; (3) the word 'silk' may be used for articles containing silk and other fibres provided it is clearly qualified; as, for example, "silk warp taffetta," "silk warp poplin," "silk pile velvet," "silk mixture," "silk union," "silk stockings, with lisle thread feet," etc.; (4) small wares—certain small wares containing silk in combination with other fibres (such as Paris bindings, gimps, eyeglass cords, etc.) have been by long-established custom known as "silks". Only where there is a clear long-established custom may they continue to be described as silk, otherwise the general principles set forth above will apply.

Cotton in the Empire.

By Charles H. Horden.

The present high price of raw cotton, which has been brought about by shortage of supplies, particularly of the American Upland type, is causing consumers considerable anxiety, and more interest is therefore now being taken in this important crop by commercial men in many parts of the world.

Statistics show that the carry over from year to year, is so rapidly decreasing, as to bring stocks dangerously near to famine level.

The figures given are as follows :—

WORLD STOCKS OF COTTON.

	American	All kinds.
1st August 1921 ..	9,351,000	14,752,000
1st August 1922 ..	5,123,000	9,536,000
1st August 1923 (estimated) ..	2,775,000	6,651,000

The total production of Cotton from 1918-19 to 1922-23 inclusive was 91,064,000 bales while the total consumption during that period was 93,545,000 bales or 2,481,000 bales more than was actually produced, which was met from the carry over of previous years.

That the production of cotton in the Southern States of America is decreasing, there can be little doubt, but whether the production will again increase to pre-war level, is purely a matter of conjecture. The decrease has been due primarily to two causes, *viz.*, shortage of labour, and the ravages of the boll weevil. Cotton is grown in the Southern States principally by colored or negro labourers, who have been attracted in large numbers from the land, to industrial centres, where increased wages are to be earned, with shorter hours of labour. With decreased labour the acreage must be reduced or cultural operations somewhat neglected, either, or both of which, usually result in lowered production.

The percentage of decrease due to reduction of labour, cannot be accurately ascertained, but the decrease due to the boll weevil, is given as 30.98% for 1921. This figure indicates that the loss due to the boll weevil is sufficient to account for the decrease in the production of American Cotton, and also indicates that unless the pest can be either controlled or eradicated, the problem of increased production in the Southern States of America, will be difficult.

The decrease in production has naturally led to diminished supplies for export from the United States, but the amount of raw cotton available for export from America, has also been seriously reduced from an altogether different cause. For many years the bulk of American grown cotton was exported for manufacture in Continental and English Mills. In recent years there has been an enormous increase in cotton manufacturing in the United States. In 1911-12 the Cotton Mills of the U.S.A., used only 33% of the cotton produced in that country. By 1914-15 the amount had increased to 40%, and in 1917-18 the amount consumed by the American Mills had risen to 58% of the total crop produced in that country. During 1921-22 the United States' Mills used 5,904,000 bales out of a total production of 7,954,000 or 74%. Not only therefore is the production of cotton in the U.S.A. decreasing but the percentage used by the Mills of that country is rapidly increasing, so that the proportion remaining for export to other countries is diminishing from two causes.

This condition of the Cotton trade has caused British Manufacturers to express doubt as to continued supplies from American fields, and likewise fear that if supplies are forthcoming, the price would be prohibitive, unless Cotton fields in other parts of the world are developed. In Great Britain, the huge sum of £500,000,000 is invested in the Cotton Industry, and it is estimated that 10,000,000 of the inhabitants are either directly or indirectly dependent on this trade for their livelihood. Any economic condition which adversely affects the cotton industry in Great Britain, would, therefore, be a national calamity. The average annual consumption of raw cotton in Great Britain, is estimated at 3,000,000 bales, four-fifths of which come from the cotton fields of the United States. British Manufacturers are therefore naturally desirous of stimulating the production of cotton within the Empire in order that they may not be entirely dependent upon the United States for their supply of Upland cotton.

Cotton has been grown in India for centuries, but the quality of the bulk of the product is of a short staple variety, and is not such as is required for manufacture by English Mills. The West Indies produce cotton of a very fine quality, but the industry is not

capable of any great expansion. After many attempts cotton has, during recent years, been established as a crop of economic importance in Australia, and so far as soil and climatic conditions are concerned, it is no doubt capable of considerable expansion. The problem of cheap labour for harvesting, etc., would, however, appear to be the chief obstacle to rapid and permanent expansion of the Cotton industry in Australia. Egypt has long been noted for the fine quality of its cotton and at present produces more cotton of desirable grades than all the possessions of the British Empire. Cotton growing in the Soudan is capable of considerable expansion, but requires the expenditure of considerable capital for irrigation and development.

Cotton has also been grown more or less successfully in Nigeria, Uganda, Tanganyika, Nyassaland, the Union of South Africa and Rhodesia, and is at present attracting a good deal of attention in the latter Territories. Large tracts of suitable land are available there at a low figure, while cheap black labour is plentiful. Ginning and packing factories are being erected in several centres and it is estimated that it will be possible to produce a fine long staple variety of cotton, superior to American middling at as low as three to four pence per pound. Every facility is being offered to growers the services of the Government Experts being available, free of charge.

With the natural advantages they possess, there is little doubt that our South African Colonies must soon come into prominence as the most important cotton producing countries in the world, and given the necessary capital and time, they should one day occupy the position at present held by the U.S.A.

I am indebted to Mr. H. W. Taylor, the Rhodesian Government Cotton Expert, for much of the information contained in this article.

Petrol Tax on Road Vehicles.

The fact that the Committee on Motor-Taxation is now engaged in the preparation of the report on the subject has led to a good deal of speculation as to the recommendations which will be made. It may be taken for granted that whatever the character of the proposals which may be put forward, a petrol tax will not be included in the recommendations of the Committee. It is admitted that in theory a tax based on fuel consumption leads a fairer apportionment of the burden of taxation that the vehicle tax which is in operation at the present time. The commercial side of the motor transport industry, which would be penalized by the substitution of a fuel for a vehicle tax, long since declared its readiness to accept a method of taxation based on fuel if a system of imposing the tax could be devised which would produce the necessary amount of revenue without giving preferential treatment to the private car owner. It has been found, however, as a result of the investigation made by the Committee, that the practical difficulties which would be associated with a revival of the petrol tax would render a reversion to this system impossible, and the Committee will, it is assumed, recommend the continuance of the existing system in a modified form. Admitting that the heavy commercial passenger and goods vehicles now using the roads are responsible for a large percentage of the wear and tear, it would, it is thought, be a mistake to found upon this fact a case for increasing the percentage of the taxation to be borne by those engaged in commercial motor transport. It is argued that the development of the road transport for both goods and passengers is of benefit to the whole community and should not be retarded by unduly heavy taxation. The whole question of vehicle design in relation to wear and tear of roads is, it may be pointed out, receiving the careful consideration of commercial motor interests. The growing number of six-wheel vehicles in service is a noteworthy feature.

Although rosy accounts are given of the condition of the paper industry in America, efforts are being made there to introduce new uses for paper. It is recalled that the introduction of paper drinking cups came as a boon to the industry, and now experiments are being made along many lines for use of paper. There has just been started the production of the radio loud speaker horns, made entirely of the pulp. Paper bottles for milk distribution are being successfully introduced. It may take several years for this business to develop to a profitable size, but Mr. George M. Seaman points out these as instances of the constantly expanding demand for paper products.

An American View of Tariffs.

[The following article is by Mr. Benjamin M. Anderson, jr., who is economist of the Chase National Bank, New York, and we are indebted for it to the "American Importer," the organ of the National Council of American Importers and Traders. Mr. Anderson is, of course, writing mainly from the American point of view, but much of what he has to say is applicable in a wider sense and his remarks are worthy of the closest study.— ED., *M.E.J.*]

The day by day work of the banker has made him especially sensitive and alert in detecting the changed economic conditions which make a moderate tariff policy vitally important to-day. The banker's experience at the clearing house enables him to see readily that ebb must be matched by flow, that debits must be offset by credits, that purchases must be offset by sales, and it is easy for him to bring into his general scheme of thought the proposition that exports must be paid for by imports.

Bankers in the financial centres, who have watched for a period of nine years an excess of exports going out unmatched even by "invisible" items like immigrants' remittances, shipping services, and the like, have been concerned over the ever-growing debt of Europe to the United States—not primarily due to bankers, but rather to investors, exporters, foreign exchange speculators, etc. They have laboured with the problem of getting this debt into the most acceptable form, namely, funded in the form of long-time foreign securities. They saw clearly the connection between the vast unfunded debt of Europe to private creditors in the United States and the credit congestion and disorder of 1920. It has become increasingly clear to them that Europe can pay her debt to us only if she is allowed to send goods here, sell the goods on our markets, and turn over the proceeds in dollars to her creditors here. The present excessive tariff rates hamper Europe so greatly in this that she would have the gravest difficulty in making large payments here, even if she were otherwise in a position to undertake it.

PAYMENT OF EUROPEAN DEBTS.

The bankers are concerned over Europe's efforts to pay this debt with gold. The approximately two milliard dollars of gold, which Europe has sent to us during the past nine years, have injured Europe and have done us little good. The United States would be much better off to-day if we had a milliard and a half dollars less of gold in the country, and instead had a milliard and a half dollars more of housing facilities in our congested cities. The excess gold masks an underlying shortage of real capital, and tempts us to use money market funds for capital purposes.

The banker does not deal with a single industry. He deals with all the interests in the community. Feverish prosperity on the part of one interest, with depression on the part of others, is not a satisfactory situation from the banker's standpoint. He prefers a situation of balance. He cannot rejoice with customer A, who receives a higher price for a basic raw material as a consequence of the tariff, if customer B, having to pay that higher price, finds his costs increased and so must surrender his foreign market to foreign competitors not thus handicapped. The banker is concerned when the inability of foreigners to market goods here makes it impossible for them to buy American export goods.

Finally, the banker studying the interrelations of different businesses with one another, of different sections of the country with one another, and finally of different countries with one another, is enabled to see the fallacy of the argument which would have markets looked upon as fixed and limited in absorbing power. He knows that if one country expands its markets, it also increases its buying power for the products of other countries.

Fears have been expressed, based on certain experiences in connection with the rapid depreciation of the German mark, that a restored Europe would bring commercial disaster to the United States. These fears are needless. The ability of German producers of certain specialities to undersell foreign competitors has been due primarily, to the fact that external depreciation of the mark has moved more rapidly than internal depreciation, a temporary phenomenon which apparently ceased a few weeks ago when German workmen began to demand wages on a gold basis, which appears to have led to a sudden

rise in gold costs in Germany and to a concomitant great increase in unemployment. During the whole of this period, moreover, our exports to Germany were steadily far in excess of our imports from that country. British Government figures of trade relations between the United Kingdom and Germany show a similar story, British exports to Germany exceeding British imports from Germany substantially in 1922 and 1923, whereas in 1913 German exports to Britain were more than double British exports to Germany. Rapidly depreciating currency is so demoralizing to production in general that its net effect upon a country's export trade is distinctly bad.

The Restoration of Europe.

A sudden strong restoration of Europe to full productive activity would lead to a sharp shock in the United States, with the necessity of a good deal of re-adjustment. Even this would be better for us than a continuance of the progressive mal-adjustment which comes from having Europe on the down grade. Europe's actual revival, however, is likely to be too slow rather than too rapid, and our own re-adjustment to it should be comparatively painless.

We should have a re-adjustment of prices and industry. With full world production, the general average of prices of goods in terms of gold should go lower, but this may even be accompanied by higher prices of many farm products and certain raw materials. An industrial re-adjustment would mean a shifting from those manufacturing lines, which use a great deal of labour in comparison with the capital they employ, to those lines of production where labour is economised and land and capital used more lavishly. We should reduce some manufacturing lines, should shift back to agriculture and the building trades to copper mining and to other lines which would be stimulated by the restoration of Europe and by a lower level of costs. The revival in copper, zinc, the packing industry, the hide and leather industry, the fertiliser industry, the farm implement industry, and the raising of grain and livestock, should much more than offset any pressure in special manufacturing lines.

Protective Tariff Futile.

Protective tariffs on agricultural products, of which we produce more than we consume, as wheat, corn, cotton, hogs, and most other agricultural products, are worse than futile. Minneapolis and other milling interests have had losses since Canadian grain has been diverted from them. Canadian cattle do not—since Canada raises little corn—compete with American corn-fed cattle; rather, they constitute raw material for American cattle feeders. Their exclusion has hampered American cattle feeders. The tariff has prevented unused pasture land on the American side of the line and unfed cattle on the Canadian side from getting together, as the natural course of trade would dictate.

We shall solve the world's problems only by taking a very comprehensive view of them. The solution is to be found in the restoration of sound money, sound finances, open markets, and a liberal international trade policy, and then in letting private enterprise alone to straighten things out. A radically different course, however, is natural when men take only a partial view of things. Disturbed by unsatisfactory markets, due to derangements in world conditions, men in particular industries demand the erection of new barriers to international trade, which may help them temporarily, but which still further demoralize the general situation. They ask for Government credits to support particular markets, which help the markets for a time, but lead to worse reactions later and meanwhile weaken the public treasury. They ask for artificially low interest rates as a means of encouraging speculative buying. They ask for progressive currency depreciation as a means of raising nominal prices. Or they ask for artificial control of markets which temporarily masks the underlying difficulties, but leaves still more riddles to solve in the end. We must take a large view, and trust the free play of private enterprise.

Miss Mildred Hand, Secretary to the National Y.W.C.A. Committee of China, writing in the April issue of the *Welfare Work*, says that in China there were no factories or mills in the modern sense of the word thirty years ago but in 1919 there were 49 cotton factories and in 1922 there were 102 cotton factories and 101 silk filatures of the modern type. Fifty per cent of the employees are women and twenty percent children under 14 years of age. The hours of labour are 12 to 14 per day, 7 days in the week. The mothers who work on the machines earn 36 to 40 cents a day or 28 to 35 cents for sorting. There is no provision for maternity benefits and the sanitary conditions at the factories are very bad.

Industrial Psychology.

Three principal circumstances have been operating of late to restrict progress in industrial psychology. The State has found itself obliged to consider what expenditure can be abated without immediate loss rather than what ultimate sacrifice the saving may cost. Owing to this circumstance the Industrial Fatigue Research Board has felt that investigations on subjects of direct interest to individual industries should be financed at least in part by the industries themselves, while the industries have been indisposed to embark in that sort of investment at the present time. Finally the continued absence of men competent in the industries under investigation from the planning and execution of inquiries into industrial working has had the inevitable consequence of limiting both practical results and the confidence felt in them, particularly in the engineering trades.

Nevertheless the work that has been done and is in progress is far from negligible, and may lead to results of high value to many industries, and indeed to industry at large. The ground to be explored is so large that the full benefit of the scientific force that is at work cannot be obtained until greater resources are available, but immediate improvement in the yield may be expected when the third source of restriction is removed.

Fatigue Research Board.

Mind and body are related too closely for the study of one to be possible without regard to the other, and a large part of industrial psychology at present perhaps the most important part, because it is most amenable to methods of measurement and can lead to quantitative results—is really physiological. The study of industrial fatigue is said to be meant either to make work more fruitful or to keep the worker more fit. The distinction is perhaps academic rather than practical, except in so far as those who use the latter alternative see in it a tactical advantage in commending the study to those whose work is being studied. Broadly, two branches of investigation have been developed. The older of the two is devoted to examining working conditions and their effect on workers and work. The other is attacking the fundamental question of the suitability of given occupations to individuals and of the occupations for which given individuals are most suitable—aspects of the same subject now known as vocational selection and vocational guidance.

All the ground of industrial psychology comes within the scope of the Industrial Fatigue Research Board's reference, and up to now it has dealt with it more or less indifferently. At present, however, it is disposed to withdraw as far as possible from investigating the problems of individual industries and, without as yet drawing a hard-and-fast line, to concentrate on those that are of general interest to industry at large or to groups of industries. This separation of function is the more practicable because the National Institute of Industrial Psychology has set itself, so far that it is able, to undertake problems of interest not only to individual industries, but to individual firms, and, as the two bodies are working in close co-operation, the gradual concentration of the work of each of them may prove to be of advantage to both.

Textile Trades.

In the present state of knowledge many investigations made on one industry may be useful to others, suggesting not only possible results in dissimilar trades working under similar conditions, but also methods of examination. This has been well illustrated in reports by Mr. S. Wyatt and others on problems of the textile trades. In one of these on atmospheric conditions in weaving Mr. Wyatt had to investigate the effects of heat, humidity, and imperfect ventilation in weaving sheds, conditions found also in other shops, and already the subject of inquiry and legislation for the last 40 years. Successively the best opinion of the day had regarded the unquestioned discomfort of weaving sheds as due mainly to want of fresh air, excessive temperature, possible excess of carbonic acid, and finally to excess of moisture as shown by dry and wet bulb temperatures; but with the help of recent physiological and other work Mr. Wyatt was able to show that the sometimes intolerable condition of weaving sheds was due predominantly neither to humidity nor temperature nor defective ventilation, but to deficiency of the atmosphere in cooling power, which was the resultant of all three conditions and of insufficient velocity of the air. This conclusion leaves concrete problems for solution by engineers, with the prospect that a successful solution will have applications wider than those of weaving sheds.

In another study of variation in efficiency in cotton weaving Mr. Wyatt's observations showed that large and unsuspected differences existed in the efficiency of individual workers which had tended to escape notice in returns of output because of the large part of the work that was done mechanically, and he was able to suggest a variety of definite problems that could be studied with a high prospect of valuable results.

Physiological Research.

The Board's laboratory work has already yielded definite results which may lead to important consequences. In one research, for instance, on the rate of recovery after muscular exercise definite relations were found between speed of movement, consumption of oxygen, and rate of recovery. In muscular exercise of any kind the body is found to lose oxygen from the outset, but for rates of expenditure of energy within the capacity of the lungs and heart to supply oxygen to the tissues the deficit of oxygen for a given speed reaches and remains at a constant value, however prolonged the exercise, and increases only with increase of speed, the total excess oxygen supplied during recovery being equal to this deficit. So far, therefore, as concerns the muscular machine, such exercise might be kept up indefinitely ; but for rates of working which, either through increase of speed or through external work, are beyond the capacity of the lungs and heart the deficit of oxygen increases with the time, and lactic acid accumulates until exhaustion sets in. The research thus seems to disclose a method of determining for any exercise the limiting speed up to which it can be carried on without causing accumulation of waste products and ultimate exhaustion.

Similarly comparison of pulse readings before and after exercise seems to indicate possible tests for physical efficiency. In relatively mild exercise this appears to be given by the pulse ratio before and after exercise ; but for strenuous exercise, such as running a mile the fittest men are found to show the greatest percentage rise on working and fall on rest. On these lines it is hoped to work out a test for the fitness of individuals for certain kinds of work.

Another type of research, which has a special interest to engineers, is one on the design of machines, having regard in particular to their relation to the operator. The prospects of such an investigation obviously depend on the engineer who plans and supervises it.

The National Institute.

Among its other activities, the National Institute of Industrial Psychology has made steady progress in its work for private firms, which has included problems of fatigue, efficiency of production, and selection of workers ; and, in conjunction with Fatigue Research Board, it has gone farther in inquiry into methods of vocational diagnosis and guidance. The industries on which it has been engaged have been very various ; textile, glass-making, seed-crushing, margarine-making, coal-mining, cabinet-making, baking, catering, confectionery making, and a mysterious new industry of which the nature is not disclosed. In every instance the Institute's work appears to have made improvements alike in the comfort of the workers and their output. In the coal-mine investigation, for instance, a substantial increase of output with reduced fatigue was induced by two separate methods one of which substituted a rhythmical for an aperiodic cycle of muscular work, and the other, with the help of some experiments in a psychological laboratory, improved the illumination, and not only appeared to save the eyesight of the men and to increase the output of coal, but also to reduce the quantity of dirt on which the energy of the miners had previously been wasted.

In the engineering trades the Institute seems to have confined itself to working out tests for vocational selection and guidance. It has been found desirable to assimilate the motions of mechanical tests to the complete cycle of motions found in practical work instead of relying on the elementary motions generally used hitherto, and some degree of concordance appears to have been found between results obtained by such tests and the rating of the subjects tested according to other criteria. For the time being, therefore, guidance such as can be given on these lines seems unquestionably to be better than none, and in the gross must be regarded as the best that is available. It is to be hoped, however, that measures are being taken to carry on the calibration of the tests with their results in the after life of the subjects, for on this work, long though it must be, depends the future of the method.

Facts, Theory, and Conjecture.

During the past year the University of London instituted academic diplomas in anthropological and sociological, educational, and industrial psychology. Experimental psychology is a science that ascertains measurable

phenomena, and its results can be made objective and comparable. To understand and apply its methods may require training and skill, as do the methods of any physical science; but experimental data obtained by one competent psychologist can presumably be applied with safety in context with those of another without requiring information as to the personal peculiarities of the respective observers. Results obtained by such methods have thus an objective value, and, seeing that the psychologist is the person best able to apply them, industry may well look to him with confident expectation in matters with which such methods can deal.

The work of psychologists includes, however, much that cannot be measured and cannot yield results having either the same certainty or the same direct applicability to industrial practice as those of their experimental science. Nevertheless, they have chosen to import their work on the interesting theories of the non-experimental branch of their subject into their industrial work, and the result has too often been neither fact nor theory, but a crop of vain conjectures made by persons who, while doubtless eminent in psychology, are in industry merely amateurs. Management and other branches of industrial work, like anthropology, have doubtless aspects of psychological interest; but the results of contemplating industry in parallel with anthropology as a branch of applied psychology are not likely to command the confidence of those who are engaged in industry, nor to yield the practical help they need.

It is to be hoped, says *the Times*, that in granting an Academic Diploma of Industrial Psychology, presumably on the analogy of the Diploma of Public Health, the University of London may not be leading those who take its examinations into the belief that they will be able to form useful judgments on industrial problems on the strength of what they have learnt of the psychology of management and work. These subjects are included in the examination; but those who take them should recognize that at present their interest is purely academic.

Waning Value of Mysore Mines.

The "*Commerce*" writes:—The statistics produced by the Imperial Mineral Resources Bureau relating to the gold production of the world for the three years 1919-1921 are by no means flattering to the Mysore mines. The Kolar gold-fields produced 440,200 fine ounces in the first year covered by this review; and in the two subsequent years the output fell to 426,200 and 380,780 fine ounces respectively. While writing on this subject, Mr. J. Burr, Engineer, P.W.D., Bangalore, says that the mineral wealth of Mysore consists of gold, manganese, chrome magnesite, lime, asbestos and earth salt. Speaking of gold, he tells us that the Kolar gold-fields constitute the only important centre in India of this mining industry. They have produced 565 tons of solid gold. There are five companies working now, some of them going down to 6,000 feet. The total outturn comes to £65 millions sterling and dividends have sometimes been declared as high as 165 per cent per annum. But at present the yield is decreasing as shown below:

Year		Oz.
1917	Standard bullion production	520,000
1918	,, ,, ,,	485,000
1919	,, ,, ,,	461,000
1920	Standard bullion production	444,000
1921	,, ,, ,,	391,000

The declension represents a reduction of 129,000 ounces during the period, valued at £500,000 sterling; and that too when the most up-to-date scientific methods are employed by which 98 per cent of the total quantity of gold contained is extracted. A few Englishmen and about 20,000 Indian miners are employed in the different mines of Mysore. Gold has been unsuccessfully worked in the Woolgheri mine, the Ajampur mines, and the Honabally mine.

The following Notification (No. 1428, dated the 17th November, 1923) has been issued by the Government of India in the Finance Department:—"In exercise of the power conferred by section 23 of the Sea Customs Act, 1878 (VIII of 1878), the Governor-General in Council is pleased to exempt from the export duty leviable under item 2 (2) of Schedule III of the Indian Tariff Act, 1894, (VIII of 1894), jute rags such as are used for paper making provided that the Customs Collector is satisfied that they are useless for any purpose to which cloth or rope is ordinarily put."

Notes from America.

Biggest Hydro-Electric Power Plant in U.S.A. to Serve Asia.

New York.—Damming a great river, irrigating a desert, building a modern city, and setting up the biggest hydro-electric power plant in the western continent—these are but so many episodes in the train of events by which the electro-chemical industries of the United States, now centred at Niagara Falls in the north-eastern section of the country, will be transferred to Priest Rapids on the Pacific Coast, so that, in addition to serving the West, they can have all Asia for their market as well.

The project is one of the greatest yet planned in the New World, each part of the whole scheme being in itself a sufficiently ambitious undertaking. The dam on the Columbia river alone, will be the largest power dam yet constructed, ninety feet high, and three miles long, the water backed up behind it making a lake ten miles long by four miles wide. The horse-power developed will be 400,000 in autumn and winter, this amount nearly doubling in the high water seasons.

Of vital, though secondary importance, is the irrigation system which will reclaim 70,000 acres of sagebrush desert now owned by the company. This land is covered 100 feet deep with volcanic ash, and needs only water to make it fertile. At present it is barren and treeless, with no vegetation but sagebrush and that only two or three feet high. The climate is hot. The sun shines 320 days in the year. There is very little rain. During the winter, which lasts only a month and a half, the temperature sometimes sinks to zero and once in a while there is half an inch of snow. Spring comes in February. During the summer the temperature runs up to 120 degrees.

Irrigation, which will be done by means of pipes laid underground, will make it possible to raise any kind of crops—alfalfa, corn and cotton. By covering the ground with green crops, and by creating a large body of water, the climate will be somewhat modified, it is thought.

The land will be divided into farms, to be sold at moderate cost. Farms may be bought for one-third cash, the balance to be paid during a period of twenty years.

This farming country will be the agricultural hinterland for the new city to be built at Priest Rapids—a city which is, in fact, already on paper. Its plan is similar to that of Washington, D.C., with main avenues radiating from a common centre. Typical of modern ideas which are being worked out in every line of activity is the way in which geography is to be taught in the schools there. Instead of text-books and maps, studied in a classroom the pupils will be taken out-of-doors to a ten-acre field where, modelled in relief and coloured appropriately, they will find a huge map of the world, on which they can actually move from place to place.

The 35,000 employees of the various factories will live in this city, whose population will, it is expected, in five years have become 50,000.

Much of the building will probably be done with the tufa rock, since there is no timber immediately available. This rock which is of volcanic origin, is of peculiar constituency; it can be sawed into shape like wood, and nails can be driven into it, yet when hardened it becomes a durable building material.

Congress granted the water rights to the company three years ago, and much preliminary work has already been done. Construction will start in earnest in the spring.

Two railroads will enter Priest Rapids, passing over a bridge on the dam.

The financing of this huge undertaking has been accomplished with the utmost secrecy, in order to keep the market stable and prevent wild speculation. Only recently has any knowledge of what has been going on for several years leaked out. The exact whereabouts of the company headquarters in Washington was known to only ten men, such was the effort to guard the secret.

The city and plant are to be on the east bank of the river, at the swiftest part of the rapids. The dam crosses on three islands.

The factories of the company will be cooled artificially to make them comfortable to work in.

Credit for Russian Textile Interests.

Credits to enable Russian textile interests to finance the purchase of large quantities of cotton, textile machinery, dyes and other needed raw materials have been made available through negotiations between the All-Russian Textile Syndicate, Inc., the New York Agency of the All-Russian Textile Syndicate of Moscow, and New York banks.

The New York Agency of the All-Russian Textile Syndicate was incorporated recently for the purpose of buying its raw materials direct. Heretofore Russia's purchases of cotton were made to a large extent at Bremen from Germans who had bought the staple from American shippers. These purchases amounted to about $40,000,000, and accounted for a considerable part of the cotton exported from the United States to Germany last year. This "middle-man" method of purchasing proved too costly for limited Russian credits at that time, and it was decided to form a corporation in the United States which could thereafter handle all these transactions directly. The result was the All-Russian Textile Syndicate, Inc., with a paid-in capital of $1,000,000.

UNITED STATES SILVER PRODUCTION.

Announcement that a study of possible new uses for silver in the industries and commerce is to be undertaken by the United States Department of the Interior lends interest to some calculations made by the Trade Record of the National City Bank of New York as to the share which the United States produces of the world's silver output and the proportion used in the industrial arts. These figures show that the United States produced in 1922 about twenty-six per cent of the silver turned out by the mines of the world as against twenty-six per cent in 1910, thirty-three per cent in 1900, twenty-nine per cent in 1870, twenty-four per cent in 1865, and five per cent in 1861, the initial year of the recognition of the United States' as an important factor in the world's silver production. Prior to 1860 the United States' share of the world's silver production was but a fraction of one per cent. In 1860 it amounted to only 116,016 ounces, for the first time crossing the ten million line in 1867, being for that year 10,441,000 ounces ; in 1922 it was 56,240,000 ounces.

Although the United States came late into the field of silver production, the share which it has supplied of the world's outturn of silver from 1492 to the end of 1923 is about twenty-one per cent, the total outturn, according to accepted authorities, of that 431 year period having been 13,175 million troy ounces, and the United States' outturn since it entered the field ninety years ago 2,735 million ounces, with a commerial value of $2,255 millions. Prior to the advent of the United States as a silver producer the world outturn averaged about 35 million ounces a year, but with the co-operation of the United States as a silver producer the total world output grew to 43 millions in 1870, 126 millions in 1890, and 226 millions in 1911, dropping during the war period to an average of about 175 millions per annum, and in 1922 again crossing the 200 million line, the 1922 output being 213,542,000 ounces.

While other parts of the world decreased their production during the war the United States' output was larger during that period than at any other time, advancing from 66,800,000 ounces in 1913 to 71,700,000 in 1917, dropping a little below 70,000,000 in 1918, and standing at 56,240,000 in 1922.

The chief silver producing countries of the world are stated in their order of magnitude of production in 1922, Mexico, the United States, Canada, Peru, Australia, Bolivia, Germany, India, Japan, Spain, and Chile. In the United States the chief silver producing states are, naming them in the order of their output in 1922, Utah, Montana, New Mexico, Colorado, Idaho, Arizona, and California.

The big additions to the world's supply of silver which were running at the rate of over 200,000,000 ounces a year prior to the war and in 1922 again crossed the 200 million line do not necessarily mean a corresponding increase in the world's stock of silver money A very considerable share of the new silver produced from year to year is now used for purposes other than monetary. Some of it is lost by abrasion, some of it passes to the Orient and disappears in the "hoards" characteristic among the people of that part of the world. Much of it has been used for years in the manufacture of tableware, ornaments and toilet articles, and of late large quantities are utilized in photography especially the thousands of miles of motion picture films, annually turned out in the world. While the silver used in tableware, ornaments and toilet articles is looked upon as possibly "recoverable" in case it is needed, that used in photography and plating is not recoverable. A recent statement by a high authority puts the quantity of silver now used in photography and silver plating at from ten to twenty million ounces a year while from twenty to thirty million ounces are annually used in the manufacture of tableware, toilet articles, etc. Accepting the higher of these figures it would appear that about one-fourth of the world's silver production is now used in the arts and industries, and this is sustained by a recent report of the Director of the Mint who states the world's industrial consumption of silver

in 1922 at 59,869,000 ounces, or twenty-eight per cent of the 1922 world outturn.

Making a Fortune at Long Distance.

How a young man living on the opposite side of the world 10,000 miles away from the New York Stock Exchange was able to amass a large enough fortune by successful speculation in stocks handled by that institution to retire from the United States Army in which he was a lieutenant is a story so unusual even in the United States that it has forged its way into the first pages of all American newspapers.

The young man in question, son and aide to Major General Wood, Governor-General of the Philippines is reported to have made profits in Wall Street of between $700,000 and $800,000 in a few months of spectacular play, basing his speculations on cable advice sent to him at midnight each week day by the owner of a small bureau which makes a speciality of sending market advice to speculators.

Starting with a small capital, Lieut. Wood made his first profits in Standard Oil of New Jersey, which he bought at 180, and sold later on advice from the "tipping" bureau at 250. The peak reached by this stock before its long decline was 250 and a half. The young speculator then became one of the most constant clients of the bureau, and had advice cabled to him to Manila at a cost of about a dollar a word, with "urgent" messages at a rate more than double. In addition he paid $500 a month for the bureau's service, voluntarily increasing it to $1,000 a month after his success in the market.

Some of the difficulties to be contended with in this long range speculating are evident when account is taken of the fact that the messages on which young Wood depended might take from 10 minutes to 13 hours to reach him, that the difference in time between New York and Manila is 13 hours, and that when the Stock Exchange opens in New York at 10 A.M. it is 10 P.M. in Manila, and when the Stock Exchange closes in New York at 3 P.M. it is 4 A.M. in Manila. Nevertheless the essential messages got through and in time it seems, for few losses are recorded in young Wood's ventures. The cost for these cables sometimes amounted to $80 a day, with an occasional total of $400 for the month. The number of shares carried by the young soldier was sometimes as much as 35,000 in a single day which is believed to have necessitated a margin of at least $700,000.

Naturally the young soldier's spectacular rise to fortune has aroused much comment in Washington, where it is said that the Secretary of War, while disclaiming any official jurisdiction over speculative investments by officers of the army, unofficially advised Lieut. Wood to stop his speculations. But Lieut. Wood announces that he has stopped his speculations, having now at his command a fortune which will allow him to pursue a diplomatic career.

Chemical Fuel Supply.

The enormous benefits which may result to mankind through discoveries in the field of chemistry brought about by experiments now being carried on in the study of colloids, include doubling the world's food supply and producing a new kind of fuel more effective than either coal or oil, according to a report by the Chairman of the National Research Council: Dr. H. N. Holmes, an authority on the problems of colloid chemistry.

"The colloid chemist who can change the physical condition of corn, rye or eat protein so it will stretch like the best wheat gluten, allowing a satisfactory bread to be made from it, will add untold wealth to the world, and help greatly toward checking famines," according to Dr. Holmes. The solution of this problem still lies in the future, but the increase of the world's fuel resources has already been partly brought about by the invention made by colloid chemists making possible the "peptizing" of powdered coal in fuel oil—that is, sub-dividing it into colloids.

In this process, coal, even of the poorest grades, is pulverized until ninety-five per cent of it will go through a hundred-mesh sieve. Stirred with fuel oil carrying less than one per cent of the peptizing agent, a remarkably stable liquid suspension is obtained. As much as forty per cent of it may be coal, and yet it is so fluid that it can be sprayed like fuel oil and burned under boilers. This "colloidal fuel" would be excellent for ships as the fire hazard is much reduced, the fuel being heavier than water. And the combustion of such a sprayed liquid is so good that the lowest grade coals, even lignite, can be utilized.

It is also due to research work in this subject that a new method of de-inking old newspapers so that the pulp can be worked over into paper, has been evolved, an important discovery from the standpoint of conservation.

Canadian Trade and Finance.

Montreal, March 1st, 1924.—The proposals for reduction in taxation recently put forward by the Secretary of the United States Treasury, with the endorsement of President Coolidge, deserve close examination in Canada for the sound common sense and scientific treatment of the taxation problem, which they will be found to contain. The repeal of certain so-called nuisance, taxes, which they suggest, is of secondary importance, and the main interest centres on the revision of the income tax-rates. Here the changes asked for are the following:—

1. Earned income, defined as wages, salaries and professional fees, is given a credit of 25 per cent of the amount of tax attributable to earned income.

2. The normal tax on the first $4,000 of net income is fixed at 3 per cent, and upon the remainder of net income at 6 per cent. Net income consists of income remaining after deducting amounts received in the shape of dividends from domestic corporations, and after deducting as well the appropriate allowance of $1,000 for single persons, $2,000 or $2,500 for married persons and $400 for each dependent under 18. The existing normal tax rates are 4 per cent and 8 per cent respectively.

3. The surtax rates begin at 1 per cent on net income from $10,000 to $12,000 and rise more slowly than heretofore to a maximum rate of 25 per cent on income in excess of $100,000 per annum. The really substantial reduction in rates under the proposed measure begins in the neighbourhood of incomes amounting to $36,000 or more. Thus, the surtax, which, under the existing law, reaches 23 per cent at the $50,000 income level, would be 16 per cent if amended as desired by Secretary Mellon; it would be 20 per cent at the $75,000 level, instead of 35 per cent; and it would be 25 per cent on incomes in excess of $100,000, instead of 48 to 50 per cent as at present levied.

Taking the case of a married man with two children under 18, we show, below, the income-tax payable in the United States and Canada respectively, the figures for the United States being those which would apply if the new law were to be adopted as it stands. The various incomes shown are looked upon as earned ones, entitled, therefore, to the proposed 25 per cent reduction referred to above.

Annual Income	Proposed Income-Tax, U. S. A.	Income-Tax, Canada
$	$	$
1,000	None	None
2,000	None	None
3,000	None	16.00
4,000	15.75	56.00
5,000	38.25	101.00
6,000	72.00	153.00
7,000	99.00	258.00
8,000	144.00	363.00
9,000	189.00	478.00
10,000	234.00	595.00

Mr. Mellon's programme has received strong public endorsement, but, as was inevitable, it has met with political opposition. Its opponents, some of them no doubt in all sincerity, see in it an attempt to relieve the wealthy of their tax burden, and propose to reduce but slightly the high tax rates, while making drastic cuts in the low ones. If the higher surtaxes are left much as they stand, those responsible for their existence will assure their constituents that they have looked after the interests of the small tax-payers, who constitute the electoral majority. The plain fact of the matter is, however, that the large incomes will disappear more and more into tax exempt securities. No revenue will be gained and an incalculable loss will be suffered, because of the destructive effect of these high surtaxes on the business initiative of those men on whom the country depends for the new enterprises and bold development, indispensable to continued prosperity and progress. Speaking along these lines in New York on February 12th, President Coolidge said:

"A very important social and economic question is involved in high rates, and that is the result taxation has upon national development. Our progress in that direction depends upon two factors—personal ability and surplus income. An expanding prosperity requires that the largest possible amount of surplus income should be invested in productive enterprise under the direction of the best personal ability. This will not be done if the rewards of such action are very largely taken away by taxation.....Surplus income will go into tax exempt securities. It will

refuse to take the risk incidental to embarking in business. This will raise the rate which established business will have to pay for new capital, and will result in a marked increase in the cost of living. If new capital will not flow into competing enterprise the present concerns tend towards monopoly, increasing again the prices which the people must pay."

"Taken altogether, I think it is easy enough to see that I wish to include in the programme a reduction in the high surtax rate, not that small incomes may be required to pay more and large incomes be required to pay less, but that more revenue may be secured from large incomes and taxes on small incomes may be reduced; not because I wish to relieve the wealthy, but because I wish to relieve the country."

Everything which has been said in support of this measure in the United States applies with equal force to Canada. This country can ill afford to diminish its public revenue, but it can well afford to amend a tax which in its higher levels will shortly be unproductive of positive gain and will serve only as a hindrance to development.

CONTRIBUTORS TO THE NATIONAL INCOME.

In putting forward suggestions for legislation designed to improve conditions in the Middle West, it is to be hoped that westerners will bear in mind that any change which favours the West at the expense of the East would be apt to prove expensive for the former within a short period. The reasons can be stated in every short order. The war and our railways have increased the national debt of Canada tremendously; interest charges plus current expenditure now constitute a total so formidable that even the present excessive scale of taxation, which presses so heavily on business, barely suffices to place our budget on a sound basis. Expenditures, other than interest, must be reduced to pave the way for a reduction in taxation, but when all possible has been done along these lines, the national debt problem still remains. To handle that problem effectively, Canada must have a moderately prosperous Ontario and Quebec, so that the corporations and 5,300,000 citizens of those provinces may continue to contribute to the National Exchequer the funds which are indispensable to working out of the debts left as a legacy of the war.

The figures of Income-Tax collections for the respective provinces, for the fiscal year ending March 31st, 1923, are given below;—

Province	Population	Income-Tax Collection $
P. E. Island ..	88,615	88,906
Nova Scotia ..	523,837	1,585,659
New Brunswick ..	387,876	1,023,466
Quebec ..	2,361,199	21,107,599
Ontario ..	2,933,662	24,935,218
Manitoba ..	610,118	4,251,583
Saskatchewan ..	757,510	1,520,803
Alberta ..	588,454	1,546,320
British Columbia	524,582	3,612,128
Yukon ..	4,157	39,877
	8,780,010	$59,711,559

Ontario and Quebec, with 60 per cent of the population of Canada, contributed 77 per cent of the income-tax, the three middle western provinces, with 22 per cent of the total population, contributed 12 per cent of the income-tax. This tax is an important one, constituting as it did almost one-sixth of the country's total revenue for the fiscal year in question. But that is not the whole story. If the industries of the great manufacturing provinces receive a set-back, not only will the income-tax contributions dwindle, but so also will customs, sales tax and business profits tax receipts, reflecting reduced activity and reduced purchasing power of the population. Through their payments, direct and indirect, the provinces of Ontario and Quebec are bearing the major portion of the burden of our national debt. This fact will no doubt be given careful consideration in the West, so that it may avoid sponsoring any programme which would have as one of its results the injury of the revenue producing East, and a consequent transference of the major burden of taxation to western shoulders.

SUGAR.

The action of the sugar market since the commencement of the new Cuban crop in December has been vary encouraging to producers. Cuba's 1923 output of 3,600,000 tons was sold at attractive prices, the average of which, according to Messrs. Willett & Gray, was 5.24 cents per pound, cost and freight New York. It is doubtful if the general run of the mills in Cuba managed to secure that average for their 1923 production, but this season there seems to be a strong possibility of their doing even better.

During the early part of 1924, offers of new crop sugars brought the price down to 4½ cents

per pound, cost and freight New York, at which figure a small lot of Cuban sugar was sold on January 8th. Refiners' requirements were such, however, that they found it necessary to come into the market for large supplies, and under the influence of this buying the price was soon advanced to 5 cents. By the 30th of January, 5¼ cents was paid. Large transactions were put through on January 31st at 5⅜ cents, and, on February 4th, continued buying on a broad scale took the price up to 5½ cents per pound, at which level it remained for some days. Present quotations (February 25th) are in the neighbourhood of 5⅝ cents per pound.

Cuban production to February 16th, amounted to 1,292,666 tons, exports to 599,352 tons—both these figures being very close to those of a year ago. Whether the estimate of 3,750,000 tons will be arrived at depends to a great extent on weather conditions from now on. Recent rains in the northern part of the island should have a favourable effect. The southern part continues to be more or less dry.

A most favourable feature of the season has been heavy buying on the part of the United Kingdom. The United States requires about 3,000,000 tons of Cuban sugar per annum. Deducting this amount, and at least 100,000 tons for local consumption, there is left available for sale five or six hundred thousand tons of the Cuban sugar crop, some of which ordinarily goes to Canada, but the bulk of which goes to the United Kingdom. The entry of the latter country into the market on any substantial scale early in the crop, therefore, gives producers the assurance that they will find a ready market for their output, and leaves them in a comparatively strong selling position. Although it is not possible to estimate accurately the amount of new crop sugars sold to date, heavy exports from the island, and sales on a large scale for February, March and April delivery, make it certain that the great proportion of sugar manufactured to date has already been sold, and it is possible that all sugar so far produced has been contracted for.

Sugar consumption in Europe is apparently returning to normal, while in North America it continues on a high per capita scale. World supplies are not too large, but neither, fortunately, are they so short that excessive prices need be feared. The sugar industry has apparently reached a point of comparative stability and prosperity, and by the close of this year's crop, Cuban producers will find themselves in excellent position to withstand any fluctuations which normal changes in demand and supply may in future occasion.

Match Industry in Bengal.

Recently we published in these columns an account of the efforts that are being made by the Government of Bihar and Orissa to foster the match industry in that province. In Bengal, too, the question of the development of the industry was taken up by the Director of Industries more than two years ago. The two main problems involved were (1) the continuous supply of suitable timber for the manufacture of the match splints and boxes and (2) the rendering of the match head compositions damp-proof. The first problem involves a complete survey of the forests of Bengal with an examination of the suitability and distribution of the timbers therein. This survey was begun in October 1922 and completed in April 1923. The number of timbers tested as to suitability for match splints and boxes was 107. These tests were all made in Calcutta match factory on actual logs from the various Bengal forests. The complete set of specimens will be exhibited at the coming Calcutta exhibition. The report of the survey of the forest and of the machine tests on the timber is at present in the press and will be issued about the end of October. The survey was carried out by Mr. A. P. Ghose who is now going to survey Bihar and Orissa for a similar purpose. The experiments on the damp-proofing of match head composition are complicated and are still in progress. These will be published when definite and satisfactory results have been obtained.

A special rebate on postage paid by all users of postal franking machines has been made by the French Government. Since no adhesive postage stamps are required and the postmarking and sorting of letters are done by the user, the post office effects an obvious economy. This method of postal prepayment is officially recognized by the Universal Postal Union and is in considerable use by business firms in Great Britain, the U.S.A., New Zealand, India and Egypt.

Economic Notes.

The following is taken from a paper read by Brigadier-General H. A. Young, C.I.E., C.B.E., R.A. (retired), before the Indian section of the Royal Society of Arts on January 4 on "The Indian Ordnance Factories and Indian Industries":—India has allowed industrial towns to develop without much attempt to avoid the evils which any study of the growth of industrialism in Great Britain would have shown to be inevitable unless precautions were taken. Working conditions in many factories, and living conditions in most industrial centres are most unsatisfactory and far from creditable to the Government of the country. The Ordnance Factories were the pioneer industrial establishments in India, and to-day they hold a leading place in equipment, organization, and methods, and also in variety and quality of production. They can be, and might be, made a pattern in every respect to the industries of the country, and they can, and should, lead the way in the technical education of the Indian. Manufactures in India are asking for protection, and the Commission which is now sitting is receiving much evidence of the impossibility of industries facing overseas competition without high protective duties. It is obvious that India imports much which it could itself manufacture, that it exports material which should be worked up in the country, yet labour is cheap, most materials are available at a reasonable price, land can usually be obtained at a moderate cost, and a huge market is close at hand. Why cannot industries using local materials compete with imports from thousands of miles overseas? There are several reasons, but one of the chief, in my opinion, is the cost of management and of skilled supervision, which often swamps the cheap factors. Labour is cheap individually but is dear in the mass, because it is uneducated, and needs for efficient output a high proportion of skilled supervision. Such supervision has to be mainly European, and is most costly, and where money is saved by limiting this class of supervision, more money is lost in quantity and quality of output. Competition with Europe, except under certain favourable circumstances, is impossible for the ordinary Indian factory till the educated Indian has been trained to supervise mechanical work and to take a proper share in the management of industrial establishments. The eight great ordnance factories provide an ideal training ground for this purpose, and many schemes have been put forward from time to time, and I believe one has at last been sanctioned. If this scheme is broadly conceived, with provision for the training of lads in character as well as for technical education, and if it is for industry generally and not merely for the Government factories, and if the cost is not thrown entirely on the military budget, then it will be of the highest importance in the progress of India. Complete Indianization of industrial management is impossible, however, in the near future, and it will never be possible till a generation of educated Indians arises, trained in mechanical and engineering sciences, experienced in subordinate management, and having the power of studying and of assimilating the industrial progress of other countires. European supervision and management in India is by no means entirely satisfactory owing to the difficulty of combining up-to-date technical knowledge with experience of Indian conditions. It is distinctly difficult in India to keep in touch with the rapidly changing ideas and methods of the modern industrial world. Competition is too keen to permit of any falling behind, and industrialism in India has a constant struggle with the climate and other conditions which exercise an enervating influence on the vast majority of people, both Indian and European. I am convinced that, in a country like India, the Government factories must be used to the fullest extent in the development of industry on sound lines. Moreover, I am certain that their efficiency will be greatly increased if their financial needs do not have to compete with the requirements of every other part of the military organization. I have no doubt whatever that considerable economy will follow if their accounts are treated as industrial and not as military accounts, and if they are placed in closer touch with the ultimate authority.

3 and 3½ per cent Securities.

We note in a recent issue of *Capital* a reproduction of Mr. E. L. Price's very excellent letter of 1st June 1921 to the Government Securities Committee. There can be no question that the position of holders of the old Three and Three-and-a-half per cent Indian Government loans is one of hardship owing to very serious fall in the saleable value of these securities consequent on the recent

borrowings of the Government of India at much higher rates of interest, themselves the direct and unavoidable penalty of the Great War. What is to be done ? Mr. Price's advice is thoroughly sound ; and it is amazing that Government has not acted on that advice long ago. Mr. Price writes :—"These 3 per cent and 3½ per cent Government Loans are not funded and should not be treated as such with regard to redemption. With funded loans it is legitimate to redeem them by simply buying them in, on the market, at the market rate. With the 3 and 3½ per cent loans no such system in my opinion is honest dealing. Where Rs. 100 was borrowed, Rs. 100 must be repaid. The only fair way to deal with these loans is to redeem them as Municipal, Port Trust, and other Debentures are redeemed, *i.e.*, in full, at par, when drawn by lot. The effect of Government starting to redeem these securities at par, even to the very small extent made possible by small limits of sinking funds available in these hard times, would be immediately felt in the market."

Maps of Industrial Development.

War, it is said, is the best teacher of Geography. But no one wants another war, and we must look elsewhere for an improved medium of instruction in this respect. Chartograph, which had its earliest manifestation in the art of the ancient Egyptians, is a much better method than warfare if it is correctly and nicely interpreted. Anaximander, a hoary-headed old Greek who lived five hundred years or so before the commencement of the Christian era, is believed to have been the first to bring his talent to bear in a practical manner upon this subject ; but maps did not become maps, such as we to-day know them, until Johann Baptist Homann, the German, and Vincent Cornelli, the Italian, put the contours of the world upon paper. The British Ordnance Survey, commenced in 1784, brought the chartographical art to perfection. It has been left, however, to Messrs. George Phillips and Son, of 32, Fleet Street, London, E.C., the well-known publishers of atlases, to produce maps that interest as well as teach, that impart commercial knowledge, that enlarge the outlook of those who study them upon a variety of economical and industrial topics. The firm is represented in India by Messrs. Longmans Green and Company, of Calcutta, Bombay, and Madras. Messrs. Phillips and Son have published a series of eight maps of the Indian Empire, each presenting a different aspect of geographical study. Edited jointly by Professor J. F. Unstead, M.A., D.Sc., & E.G.R. Taylor, B.Sc., the maps deal with the following subjects :—Impressions in coloured relief of land and communications ; winter conditions ; summer conditions ; actual temperatures in January ; actual temperatures in June ; political divisions and communications ; populations and languages ; mineral deposits and commercial development. The maps have been prepared by special request and are uniform with the series that has been widely adopted in schools throughout the world. They are beautifully printed in colours, and the size is 43 by 33 inches, scale 64 miles to the inch. The map illustrating the commercial development of India should prove a source of useful reference for business firms. Agricultural and horticultural regions, highly developed and those less highly developed ; industrial regions ; pastoral forests ; plantation cultivation ; and unproductive regions are each indicated by distinctive colouring. Caravan, railway and steamer routes, navigable rivers and irrigation canals are included, and the marked areas in which metals and other minerals are found include the developed and undeveloped coal-fields, petroleum, iron, manganese, gold, silver, lead, zinc, tin, tungsten, and graphite. The size of lettering indicates the importance of crops grown, and the areas devoted to cattle-raising are similarly dealt with. With the series is included an explanatory handbook dealing fully with the scheme and purport of each map.

Agricultural Holdings.

Describing the progress of a scheme for the consolidation of agricultural holdings in the Punjab in the *Pioneer*, Mr. F. Calvert, Registrar of Co-operative Societies in that Province, remarks that considerable advantages are likely to flow from it. Nearly 6,000 owners have agreed to the scheme in about 150 villages, and it is so worked that "the mere diminution in the number of scattered blocks of land is far from being the only advantage gained. The land is rearranged around the wells so as to make these of more use. The number of boundaries, and therefore of material for boundary disputes, is greatly reduced." How great and beneficent can be the result of a satisfactory rearrangement of holdings is evident from the statement that some 1,750 acres of land, which were formerly unfit for cultivation by reason of their fragmentation, have been brought into cultivation. Mr. Calvert gives a detailed evidence as to how the working of the scheme has resulted in the reduction of fragmentation, and concludes that "it begins to look as though we had at least found a remedy for a very serious economic

evil." In the face of such claims, it is up to other provinces to examine the scheme and its applicability to themselves.

Bengal Match Industry.

Mr. A. P. Ghose, a match expert, has made an investigation of the possibilities of the match industry in Bengal at the instance of the Department of Industries, and has suggested that the Government could help persons interested in the industry in the following ways:—(1) by securing for them rights to obtain match wood from Government reserved forests at reduced royalty rates; (2) by obtaining concessions on freights from the railway and steamer companies for raw materials and finished goods; (3) by granting loans or subsidies in some shape; (4) by starting model factories; (5) by buying the local products for State use; (6) by retaining the enhanced import duty on all foreign matches to serve as protection; (7) by reducing the import duties on chemicals and other raw materials for matches; and (8) by general technical help of various kinds. The question deserves to be taken up in right earnest in the United Provinces also.

Air-Car.

The Daily Chronicle states that a German firm will shortly be putting on the market a tiny "air-car" costing less than a motor-cycle, with a side-car, which, it is claimed, can be flown for one farthing a mile. The machines are being built at Cassel. They will be waterproof and will carry a pilot and passenger for over seventy miles an hour.

Artificial Silk Industry.

A Trieste correspondent writes:—The interest of speculators has, moreover, of late been centred on the shares of the artificial silk industry, in which connection it may be remarked that a leading concern manufacturing artificial silk, the *Suia Viscosa*, which turns out 15,000 kilogrammes daily, has quite recently raised its share capital from 350 to 600 million lire. The Italian artificial silk industry has made remarkable progress during the last few years, and it is a fact worthy of special notice that Italy, which until a few years ago had to cover the bulk of its requirements by importing goods of French origin, has now an export surplus in this commodity. During 1923 Italy exported 2.3 million kilogrammes of artificial silk, while its imports amounted to no more than about half a million kilogrammes. Among the countries producing artificial silk, Italy now ranks fourth, following in order after the United States, Great Britain and Germany. Apart from the cellulose and the coal, moreover, all the more important raw materials needed in the industry are produced within the country. It is a fact that the use of artificial silk is slowly but steadily on the increase in Italy; the price, which stood at its highest in 1920, is now even below the low water-mark of 1918.

Insurance Law.

Mr. Phiroze C. Sethna of Bombay enquired in the Council of State recently about the amendment of the Indian Life Assurance Companies' Act, 1912. Mr. D. T. Chadwick, Secretary in the Commerce Department, said that the present Indian Insurance Act relates only to life insurance. The Government of India consider that mere amendment of that Act would be unsatisfactory and that it would be preferable to introduce legislation repealing that Act and dealing with life, fire and employers' liability. Marine and other forms of insurance will probably also be covered in so far as they form part of the business of a company transacting life, fire or employers' liability insurance. It was not possible to prepare such a comprehensive bill in time for consideration this session. Progress had however been made in preparing a draft, and it was expected that commercial opinion would be consulted upon it during the ensuing months.

World's Gold.

The Financial Review of New York announces that the United States now hold "more than half of the entire monetary stock of gold in the world. Our total now stands at 4,170 million dollars (say £834,000,000), making our monetary structure the strongest of any nation." To this, Messrs. Samuel Montagu & Co. effectively reply "The United Kingdom has always preferred trade to unnecessary stocks of bullion, and has not been without ultimate reward." They go on—"the very scarcity of gold brought about by the action of the United States of America makes production more difficult by raising the cost of mining." But here the Bullion Experts have slipped badly. Scarcity of gold (or any other forms of currency) *depresses* prices and *lowers* the cost of mining. The scarcer gold is, the greater its value,—the more it will purchase, and the lower the general level of prices. As a matter of fact, the piling up of gold in the Treasuries of America, provided certificates are granted there against that can be used by the Banks to increase their monetary issues, tends to expand the currency and *raise* prices in the U. S. A. This rise of prices in America may affect price levels all the world over, in time,

Books in Brief.

Short Reviews of Recent Books.

The Labour Movement.

By L. T. Hobhouse. Published by T. Fisher Unwin. Price 3*sh.* 6*d.* net.

Professor Hobhouse's volume on the "Labour Movement" is almost a classic on the subject. It was first issued, we notice, in 1893 ; a second edition appeared in 1897 and since then three successive impressions were issued in 1905, 1906 and 1913. The present edition is, in consequence, the sixth impression, but is really a new edition, entirely revised and reset. Professor Hobhouse is an author to read and ponder. His book is a protest against the conditions which make Trade Unionism possible in England. It is a condemnation of the habit of mind —"attitude of mind" the Professor calls it— that makes it possible for the rich to look upon the poverty around them with complacency. Trade Unionism has come to stay in India and what would the worthy Professor think of its development in this country of countless millions ? Ignorance and poverty rule supreme here and the "beautiful doctrine of industrial peace" has not so far meant "peace and social honour". Professor Hobhouse puts his remedy thus : "A more democratic State than ours might conceivably dispense with Trade Unionism and settle disputes by compulsory arbitration." Are Governments democratic enough here or in England to adopt this remedy ?

Lest we should forget, we would add that Professor Hobhouse's book is, as usual, easily read but hard to combat or follow out. It is a mental tonic. To some, it ought to be an intellectual treat.

The book consists of only five chapters and their headings are :—(1) Labour and Wealth ; (2) Trade Unions and the Conditions of Labour ; (3) Co-operation and the Control of Production ; (4) The Distribution of Wealth ; (5) The Control of Industry and the Liberty of the Individual.

Economic Sophisms.

By Frederic Bastiat, translated by P. Z. Stirling, LL.D., F.R.S.E., with an introduction by the Rt. Hon. H. H. Asquith, M.P. Published by Messrs. T. Fisher Unwin, Ltd., Adelphi Terrace, London.

It is a sign of the times that we have a new translation of Bastiat's well-known "destructive" work—*Sophismes Economiques.* Bastiat stood for non-interference of Government in matters of trade and manufactures. He was a follower of Cobden's "Grand Movement" as he called it in his "Cobden and the League". If our memory serves us right, the original translation of *Sophismes Economiques* published in 1877, was styled *Sophismes of Protection.* The present title is, we think, more appropriate. It is fitting in the nature of things that Mr. Asquith should write the preface to this work in a few well-chosen but vigorous words. He concludes with this sentence, which is both just and accurate :— "The *Economic Sophisms* are no more out of date than the *Wealth of Nations.*" We commend the book to our readers. It is a timely publication as much for India as for England.

Coconut Planters' Manual.

Fergusson's "All About the Coconut Palm." Revised and rearranged by C. Drieberg, B.A., F.H.A.S., Editor, "Ceylon Observer". Published by the "Ceylon Observer" Press, Colombo.

Fergusson's book is so well-known in India that it requires but a few words to introduce a new edition of it to coconut growers in India. Mr. Drieberg and the "Observer" Press deserve to be congratulated on the new edition they have issued. The book, though a compilation, is up-to-date in every respect and in its present form ought to be acceptable to all engaged in coconut culture. It is full of information and the illustrations enhance its value.

Cotton Facts (Edn. of 1923).

Published by the Shepperson Publishing Co., 16-18, Exchange Place, New York, U. S. A.

We have pleasure in introducing this edition of *Cotton Facts,* which is thoroughly up-to-date and full. It is a book that ought to find many purchasers in India—especially as Cotton is a thing closely connected with India's welfare. The book is a handy compilation, from official and reliable sources, of the crops, receipts, stocks, exports, imports, visible supply, sales, prices, consumption and manufacturing output of cotton and cotton products in the United States and other countries for a series of years, with Cotton Mill statistics of the U. S. A., Europe, India, etc., cotton acreage of each State in the United States, etc., etc. We should be glad to see this little book catch

the eye of mill-owners, investors, and others interested in the Cotton trade in India.

The Indian States Act, 1922.

Aryabhushan Press, Poona. Price Rs. 2.

This is a symposium of views on the Indian States Act, 1922. It is full and exhaustive, with a foreword by Messrs. N. C. Kelkar and A. V. Patvardhan, Secretaries, Dasini Samsthan Hitavardhik Sabha, Poona.

The Indian Administration.

By V. G. Kale, M.A., Professor, Fergusson College, Poona. Aryabhushan Press, Poona City. Rs. 4.

We welcome the fifth edition of this popular publication. It has been, we note, thoroughly revised and brought up-to-date. The Reforms Act of 1919 rendered much change in the original text and this has been done with great care. The arrangement is chronological and treatment eminently logical. The book, even to lay readers, ought to give a good idea of the Central, Provincial and Local Administrations. To students of Indian Universities, it ought to be specially useful.

The Dravidian Element in Indian Culture.

By Gilbert Slater, M.A., D.Sc., late Professor of Indian Economics, Madras University. Published by Ernest Benn, Ltd., 9. Bouverie Street, London, E. C. 4. Price 10*sh.* 6*d.*

We confess to a sense of disappointment in regard to this book. Our high expectations of it were not fulfilled when we had finished reading it. It is an eminently readable book; it is simple and catching in style. Dealing as it does in layman's language with the origins and contributions of the Dravidians towards the common heritage of India, it ought to find many readers in Southern India. To the serious student of Indian Ethnology, however, it cannot prove more than mere a novice's attempt. We do not write to criticise but only to suggest that works of this kind should be undertaken only by persons who have a thorough first knowledge of at least the leading authorities on the subject. We fear that Dr. Slater's work leaves much to be desired as a serious contribution to the subject to which his book relates. But there is this to be said in regard to ventures of this kind: they show the entrancing nature of the subject. The more it attracts labourers unto itself, the better it is for its elucidation. We welcome the book as a further indication of the interest that is being taken in England in matters Indian to-day.

Fiscal Policy in India.

By Pramothanath Banerjea, M.A., D.Sc., Econ. (London), Minto Professor of Economics, Calcutta.

We have read these topical lectures with great interest. Dr. Banerjea covers a fairly wide field. Besides the introduction, there are six chapters devoted to the following topics :—Fiscal Policy of the East India Company, Fiscal Policy of India Under the Crown, Fiscal System of the War Period and After, The Theoretic Bases of Free Trade and Protection, Right Fiscal Policy for India, and India and Imperial Preference. The last two deserve special attention, while for a proper appreciation of what is contained in them a close reading of the earlier chapters is necessary. The burden of Dr. Banerjea's plea may be summed up in one sentence :—"India must be left free to settle her fiscal policy in the way she finds it best suited to her own needs and conditions." With Self-Government, India is bound to take, he says, a more tolerant view of Free Trade.

Acknowledgments.

(1) The Mysore Legislative Council and the Representative Assembly Manual, Vol. II.

(2) Report of Committee of Indian Merchants Chamber for 1923.

Topics in the Journals.

(1) Journal of the Ministry of Agriculture, for February 1924.—Co-operative Marketing of Milk in the United States.

(2) Social Service Quarterly, for January 1924.—An Outline Scheme of Rural Medical Service by Dr. D. N. Maitra.

(3) Lucknow University Journal, for February 1924.—Some Aspects of Social Insurance in Indian Agriculture by Bhujangabhushan Mukerjee.

(4) Vedic Magazine, for February 1924.—Extent of Ancient Indian Engineering by Rao Saheb K. V. Vaze, I.C.E.

(5) Hindustan Review, for January 1924.—India's Industrial Revolution; An American Study by Dr. G. Sherwood Eddy.

(6) Young Men of India, for March 1924.—Political Instinct: Eastern and Western by St. Leo Strachey.

(7) Journal of the Ministry of Agriculture, for March 1924.—Agricultural Policy of the Government.

(8) International Review of Agricultural Economics, for Jan.—March 1924.—Agricultural Co-operation by H. Calvert.

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The Mysore Economic Journal

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of all Economic Topics of Interest

Vol. X MAY 1924 No. 5

Separation of Railway Finance.

By A. S. Venkataraman.

The Right Hon'ble Ramsay MacDonald was once reported to have said "Scratch the India Government and you will find the John Company". There is more than what meets the eye here though it would be an impudence to suggest that he said more than he knew. We do not attempt to hansardize him but that he must grow up to the full stature of his remark and act up to it, is a consummation devoutly to be wished for. Proper stress in the History of the British India must be laid on the fact that the scrupulous regard for commercial and financial prosperity of the company which ultimately resulted in the successful establishment of the British Indian Empire, as contrasted with the French attempt which was inherently infructuous, is still the governing principle at the back of the Indian Government and however much it may try—it is doubtful whether it has tried—it cannot rise above commercial considerations and the narrow vision always associated with them. So much has this principle entered into the marrow of the British Indian History and also politics, that it does not escape even the indifferent attention of a casual reader. The more one studies the History of India, the more irresistible is the conclusion, and however uncomfortable it may be, you cannot get away from it.

The Railways afford a unique example. Without any attempt to misread history, one can easily detect the object with which Railways were originally started. The considerations were mainly either commercial or strategic and secondarily, if at all, humanitarian. The English coastal settlements in India acted as emporiums, the distributing centres for the European articles as well as the collecting centres for the Indian articles. In course of time, these were connected with the interior by Railways for purposes of facilitating these transactions. Even though we find at present the India Government as a ruling body, we cannot disabuse our minds of the notion that the ruling body has grown over the trading body, just as the Indian asoka tree and margossa are united, as if in wedlock, and that the present ruling body has still commercial transactions. The Railways have been constructed for strategic purposes also, either for safeguarding the frontiers or for the safe conveyance of troops and on the whole for strengthening the hold on the country. So far with regard to the Railways along the coasts or frontiers. In the interior they serve to exploit the country's resources and to explore all the avenues of trade and commerce. The final result is that the bulky articles such as raw materials and foodgrains even in obscure and far-off villages have been dragged out of their secluded homes, *to make their appearance in* Western markets, often to the detriment of the Indian consumer. At the present day too, the Railways are being constructed at a breathless pace, to which Sir D. E. Wacha alludes thus in his paper on Indian Railway Finance, "In short, as in many other matters, so in connection with Railways, it is the foreign exploiter who calls the tune but it is the indigenous tax-payer who is called upon to pay the piper. It is another of those minor acts of financial injustice which creates dissatisfaction and aggravate the sullenness prevailing in the land."

Now there is an attempt at separating the Railway from General Finance. The

proposal is not new. It has been suggested by the Acworth Committee. Having the support of the Committee's views, the Commerce member was to move for the separation of Railway Finance. When the proposals of the Committee have not all been adopted, it is a matter of surprise that this recommendation alone should be commended to the consideration of the Assembly. No doubt the principle of State-operation of Railways has been conceded, but there is no immediate prospect of the State assuming management of all Railways except the East Indian and the Great Indian Peninsular roads. Educated opinion has not declared itself in favour of separation, while the two chambers of Legislature, even definitely rejected a proposal for the same object in 1923 and the country has not had sufficient time before it for the consideration of the question.

Before dealing with the question in detail, we may turn to the arguments of the Finance Member. According to him, the main evil of the present system lies in the "alternation between raids by Railways on the tax-payer and raids by the tax-payer on the Railways". Besides obviating this evil, the new system, according to him, holds out the prospects of valuable dividends in future budgets and great economies in the working of Railways. It will give them a real incentive to increase their efficiency and to provide better service at reduced rates. "The tax-payer, instead of paying the whole of the expenses and taking the whole of the incomings of the Railways will enter into a bargain with the Railways to receive from them (*a*) a sum sufficient to pay in full the interest on the capital he has invested in the commercial lines, (*b*) an additional dividend of 5/6 of one per cent on that capital, (*c*) a share of 1/5 of any surplus earnings that may be secured in addition. In return the Railways will be left to carry on their business with the right to retain any surplus over and above what they pay to railway purposes, first of all for creating reserves and then by using those reserves to improve the services they render to the public and reduce the price which they charge for those services. The Government of India and this Assembly will remain in complete control of the Administration just as they now are . . . . . The tax-payer will secure a regular and increasing contribution from his investment largely independent of fluctuations in Railway receipts and expenditure and the Railways will be able to spend money according to the real needs of the Railway system, unimpeded by the necessity for conforming to the vagaries of budget figures and the requirements of budget accounting. The Railways will become a real commercial undertaking managed on commercial lines and the tax-payer will get the benefit of commercial accounts and management."

The Finance Member begins by referring to the alternation of raids between the Railways and the tax-payer. Without being meticulous as to the choice of the expression 'raid', one can understand what he is driving at. The Railways, not being the proceeds of taxation (Wholly so !) and yielding uncertain profits, the profits must be more and more devoted to the expansion and improvement of the Railways and this is to be done by relieving the Railways of the "vagaries" of the budget. The prospects as held out both to the tax-payer and the Railways appear to be alluring but we must see the other side of the shield also. Before the Railways began to pay, they formed a staggering load on the tax-payer. "Up to the end of 1917-18, capital expenditure on Railways amounted to more than 372 million £ sterling or 560 crores of Rupees. The profit and loss account is indicated by *the Indian Daily News* when it wrote in 1919 : "In 1896 the Welby Commission showed that the deficit on the Railways of India amounted to 52 *crores or about a crore a year* (italics mine—A.S.V.). In 1909 Sir Dinshaw Wacha demonstrated that the net earnings of the Railways were under one per cent (.91 per cent) or allowing for the annuities as repayment of capital to at most 1.20 per cent after 60 years. In the appendix to his remarkable essay on Indian Railway Finance he gives a table showing a net loss of 52 crores from 1848 to 1895, a gain of eleven crores from 1895 to 1910. A good deal of money has been made since but as we say, most of it, for the last four years, has been by raising freights and passenger rates and inflicting considerable loss on the country by inability to carry. This loss has been chronic for the last 15 years and up to the war was the result of ineptitude. As we have said, the best course is to improve the roads and to cease to pretend that the Railways are an immensely valuable asset, making huge profits in relief of the tax-payer. Six crores of ostensible profit may be obtained by 12 crores of damage to the trader." For 50 years the Railways have been a decided liability at the rate of

a crore of Rupees a year and since 1895 they have begun to yield some profits. Even taking for granted that the profits were realized without a corresponding increase in fares and freights—while it has not been so—the profits have been uncertain and all along, the tax-payer, willy-nilly, helped the Railways. And now, during the last 6 years in spite of the profit-yielding Railways, the budgets remained unbalanced, and if the separation of Railway finance—which means the dedication of most of the Railway profits to expansion and development of Railways, becomes a *fait accompli*, the tax-payer who has been a shareholder of Railways and who continues to be so, will share the unenviable fortune of one who sows only to surrender his harvest to another. This aspect of the question has been finely expressed by the late Sir William Meyer in reply to Sir D.E. Wacha's contention in favour of the Railway surpluses being ear-marked for capital expenditure on railway programme. "On the other hand if you take Sir Dinshaw's metaphor and treat the people of India as shareholders in Railways, you have got the fact that the shareholder went without any dividends for a long time, because as Sir Dinshaw has aptly reminded the Council, it was not until after many years that the Railways began to pay and the shareholders may quite reasonably claim that they should have some reward for their past abstinence. Also as shareholders might claim in an ordinary business, they might say 'It is all very well for you to put part of the profit into improving the business but you must apply part of it in giving us dividends.'"

Let us revert again to the Finance Member's "alternation of raids". He ascribes this alternation to the inclusion of Railways in the General Finance and Budget. I am inclined to think, however, that it has been due, not so much, to the inclusion of Railways as to the method of "*financing*" so far pursued and here we have to note certain points. The first and foremost is that, what ought to be charged to capital account, has been and is being charged to revenue account. The capital sunk in railway is being supplied out of the current revenues of the country, while more properly, it ought to be obtained by raising loans, for the very simple reason that the railways are not for the benefit of one generation only. If the Railways are paying, the interest might be paid and a sinking fund be instituted to repay the loans raised. This point is borne out by Gokhale's observation on the 1907 budget:—"Time was, not long ago, when the Government never thought of spending more than 4 or 5 crores a year on railways. And ten years ago, Sir James Westland protested sharply against the manner in which programme after programme of Railway construction was being pressed on him in breathless succession. It is true that in those days the railways were worked at a net loss to the State, and that in that respect, the position has undergone a change. Still 13½ crores is a very large amount to spend in any one year on Railways and yet the Hon'ble Member has thought it necessary to be apologetic in making the announcement! "My lord, I have no objection to the Government using its borrowing powers as freely as possible to push on railways, which now rest on a sound commercial basis. But it seems to be most unfair that the loans thus raised should be *supplemented by the proceeds of the taxation.*"

So far, a voice, however feeble, has been raised in protest against the railway expenditure being charged to the revenues. The varying revenues have affected the Railways and have been, according to the law of action and re-action, in turn affected by them. The state of things has been rendered worse still by military expenditure. What ought to be charged to army expenditure has been, and is, shoved on the devoted head of Railway expenditure. The losses on the working of military Railways are charged to the railway estimates, instead of the army estimates, in order to make the army expenditure less bloated. When losses due to military Railways are tacked on to Railway expenditure, they are merged in a big, major and heavy item, escaping all scrutiny. Mad Hamlet, the Prince of Denmark, was shipped to England by his uncle-king, for his madness there would not be recognized, where every other man suffered from a similar malady. Thus, as shown above, the Army estimates affect the Railways and the Railwaysm in turn transmit the pressure, causing disturbance and fluctuations in the General Revenues.

A *third point* to be noted relates to the insufficient attention that has been so far devoted to Railway Finance. "There is no department of Government which comes in contact with so large a proportion of the population of the country, which spends or earns a large amount of money, which exercises such an enormous influence on the moral

and material well-being of the country, which touches life at so many points and which throws such a large liability for recurring expenditure on the general tax-payer and yet the huge sum of 104 crores was voted away in less than 2½ hours!" The reference is to the Budget of 1922 where 61 *demands* involve an expenditure of 60 crores of Rupees as contrasted with 2 *demands* for a sum of 104 crores of Rupees! The time allotment for discussion has been in the ratio of 61 : 2. The assignment of time being poor, the attention is slack, which must in turn tell upon the attitude of the members of the Legislature to Railway questions. Again, even those two demands usually come up for discussion at the fag-end of the budget debates, and as they are moved by cautious and tried statesmen, they generally lullaby jaded minds. What are we then, to think of a discussion at a time when enthusiasm is disappearing, energy fissiparous, and the guillotine more and more in prominence? The discussion too, must be correspondingly rich or poor. The disparity in size between individual demands has led to the lack of proper attention, discussion and control by the Assembly. The proper remedy is to split up the Railway demands and to assign time in proportion to other demands and to watch the results of the debates. The Assembly must have a real control over Railway matters and this is scarcely be thought of, in the absence of any proper discussion of the subject. There is a case then for a more detailed and effective discussion of Railway demands alongside of the other demands.

A fourth point in "*financing*" so far pursued is that surpluses have been spent as capital outlay on Railway construction. It is best expressed in the inimitably clear, terse and effective language of a well-known authority on Indian Finance. "The total of these surpluses during these 9 years (1898-1907) stands at the high figure of 37 crores of Rupees or about 25 million pounds sterling and nearly the whole of this amount has been spent as capital on Railways." (Nearly the same amount for one year in 1919-20.) "Now a surplus is so much more money taken from the people, either through miscalculation or in other ways than was needed for the requirements of Government. And as it is not possible to return this money to the tax-payers in a direct form, what the Government is bound to do with it is to apply it to purposes which are most calculated to benefit the mass of the people. And the question that we must consider is this—What is the most urgent need of the mass of our people at the present day? ..... The claims, for instance, of sanitation on the attention of the Government are at the present day infinitely stronger and more urgent than those of railway construction." Now corresponding to Gokhale's nine years of surpluses, we have six years of deficits, owing to the conditions created by the war and post-war problems and the Reforms, a bad third. The claims of Sanitation and Education, *i.e.*, the nation-building departments, have become stronger and more urgent since Gokhale's days and Railway construction less and less urgent. But the pity of it is that the Railway matters are receiving greater and greater attention (rather extravagant!) while sanitation and education are becoming, comparatively a less and less cared for, and more and more neglected lot. Properly speaking, these departments must now be fed on the profits of the railways. If for fifty years, the general finance suffered a loss of a crore of rupees per year owing to the Railways, does it not stand to reason that the Railways should surrender their profits—need not bear loss on that account—when General Finance finds itself unable to meet the growing demands of the more needy departments whose claims have been ignored in the past. If the Railways give a crore of rupees to them for thirty years, they will be more than satisfied. There is as much reason, as much ethics, as much wisdom in this demand of the General Finance, as there was in the demands of Railways in the past.

In the recent Budget speech, the Finance Member offers the bait of increased efficiency of Railways and better service at reduced rates, if separation is affected. We are unable to appreciate this new-born desire for efficiency and better service at lower rates. The principle of State-Management of Railways has been recommended by the Acworth Committee and conceded by the Government. State-operation will come into force at the expiry of each Railway contract. In the near future only two rail-roads, the East Bengal and the Great Indian Peninsular, come under State-management and one fails to understand why separation should be thought of, earlier than general State-operation of Railways. Separation of Railway Finance, must follow, not precede, State-operation of most of the Railways; meanwhile Railway

demands in the budget must be more fully gone into by the Assembly and in the interim all new Railway constructions should be automatically stopped. Space forbids an investigation of the Finance Member's bait of better efficiency and service at reduced rates; but we must be content with one supreme fact—and that is disregarded all is disregarded and discarded—*viz., that the Railways exist for the people and not the people for the Railways.* The Acworth Committee entered a caveat when it said, "Our recommendation as to State management must therefore be read as coupled with and conditioned on the adoption, at least substantially and in main outline of the recommendations, which we have made with respect to financial and administrative reforms." State-operation unaccompanied by full financial and administrative control, is a contradiction in terms and therefore stands self-condemned. No attempt at solving the Railway Problem will be perfect or desirable or satisfactory, even after State-operation comes to pass, unless the Assembly has got entire control, financial and administrative, over the Railways and until the executive is made fully responsible to the Indian Legislature.

Cotton-growing in Australia.

An authoritative article dealing with the present position of cotton-growing in Australia and the possibility of the Dominion becoming an important source of supply, is published in the current issue of the "Bulletin of the Imperial Institute". The author, Mr. W. H. Johnson, who was at one time Director of Agriculture in the Southern Provinces, Nigeria, recently paid a visit to Australia to report on the suitability of different parts of the country for cotton cultivation.

In 1788, Governor Philip brought cotton seed from South America to plant in Sydney, and since then many attempts have been made to grow cotton in Australia. The first bale of cotton exported from the Dominion was produced in Queensland in 1852. With the help of premiums paid by the Government and the high prices ruling as a result of the American Civil War, production increased and, in 1871, shipment from Queensland amounted to 2,602,100 lbs. Subsequently, the industry declined, and, with the exception of a slight revival in 1890, remained practically dormant until the last few years. Considerable interest has now been again aroused. The Queensland Government are encouraging the growth of the industry by providing cotton seed free of charge for planting purposes, and by paying farmers a guaranteed price for seed-cotton; assistance is also being rendered by the British Cotton Growing Association. In 1922, an area of 7,000 acres was planted with cotton in Queensland and the yield of seed cotton by the end of August had amounted to over 3¾ million lbs. Mr. Johnson discusses the problems confronting the planter in the various regions where cotton-growing has been proposed and concludes that the soil and climatic conditions in large portions of Queensland, Northern New South Wales, North-West Australia, and in the Irrigation Settlements of Victoria, New South Wales and South Australia, are well adapted for cotton cultivation, but carefully conducted trials will be necessary to decide whether the crop can be grown profitably on a large commercial scale.

We take the following from the *Wednesday Review*:—Among those who have been nominated by the Government of India to the Council of State and the Legislative Assembly, we are glad to see the names of Mr. G. A. Natesan of Madras and Mr. K. C. Roy of Delhi. Apart from their personal qualifications for a seat in the Legislature their nominations are specially significant. It is seldom that the Government turn to the profession for journalism for making nominations to the Councils or otherwise associating them in the administration of public affairs. Not that the journalists regard this indifference of the Government as a deprivation, but then the Government must be aware that the association of tried and experienced journalists in the responsible task of administration will be of great public benefit. The appointment of Mr. Natesan and Mr. Roy, we take it, indicates a slight change in the angle of vision. Personally no better selection can have been made as both of them are journalists of established reputation and standing and have a long record of public service to their credit.

Indian Railway Budget.

By Sir Basil Blackett.

[*Dealing with the subject of the Railway Finance in the Legislative Assembly, Sir Basil Blackett said :—*]

"Before coming to grips with the figures of the general Budget for 1924-25, I must devote attention to one more special subject, the subject of Railway Finance. Honourable Members have all seen the resolution on the subject of the separation of the Railway Budget from the ordinary Budget which has been on the table of the House for some days. I know of no reform which offers greater attractions, and greater benefits to our finances and our Railways alike than a definite separation, if it can be achieved. The condition of affairs hitherto prevailing has inevitably tended to an alternation between raids by the Railways on the tax-payer and raids by the tax-payer on the Railways. If we can succeed in putting an end to this state of affairs, we shall have achieved a piece of genuine constructive work for which the credit will be in large measure due to the initiative of the legislature which has pressed the problem upon the Government. It is proposed that time shall be set apart next day for a full discussion of the resolution on this subject. I must not, therefore, delay the House now by dwelling upon it. I want only to say that in my opinion the reform proposed will bring us valuable dividends in our future Budgets, and at the same time lead to great economies in the working of our Railways. It will give them a real incentive to increase their efficiency and to provide better service at reduced cost to their customer, the Indian public.

In the figures of the general Budget as presented, the return which we expect to receive from our investment in the Railways is included in accordance with the new settlement now proposed. The next year, instead of paying the whole of the expenses and taking the whole of the incomings of the Railways, will enter into a bargain with the Railways to receive from them (*a*) a sum sufficient to pay in full the interest on the capital he has invested in the commercial lines, (*b*) an additional dividend of five-sixths of one per cent on that capital, and (*c*) a share of one-fifth of any surplus earnings that may be secured in addition. In return, the railways will be left to carry on their business with the right to retain any surplus over and above what they pay to the Government and to apply it to Railway purposes, first of all for creating reserves and then by using those reserves to improve the services they render to the public and reduce the price which they charge for those services. The Government of India and this Assembly will remain in complete control of the Railway Administration just as they now are. That control will be in no way impaired. But there will no longer be any need to consider from the narrow standpoint of their effect upon the general revenues in a particular period of twelve months that is in particular Budget period, proposals by the Railway authorities which, though excellent and desirable in themselves, might, under the present system, upset the apparent equilibrium of the Budget for the year. The tax-payer will secure a regular and increasing contribution from his investment, largely, independent of fluctuations in Railway receipts and expenditure, and the Railways will be able to spend money according to the real needs of the Railway system, unimpeded by the necessity for conforming to the vagaries of Budget figures and the requirements of Budget accounting. The Railways will become a real commercial undertaking managed on commercial lines, and the tax-payer will get the benefit of commercial accounts and management.

Among the papers which are being circulated with the speech, Honourable Members will find statements showing first, how the net contribution by the railways to general revenues is arrived at under the proposed new settlement, and second a comparison of the figures under the two systems showing what the contribution would be under the old system. The main figures in the Railway Budget framed according to the proposed new plan are, traffic receipts 97.07 crores, working expenses 65.23 crores, interest and other charges 26.23 crores, leaving 1,33.48 lakhs as reserve, 4,27.30 lakhs as the net contribution to general revenues. Under the old system the net contribution is 4,16 lakhs. It is necessary, however, to mention one special point. One of the results of the close scrutiny of Railway finances which has taken place during the past year has been to bring

to light a difference on the wrong side between the value of stores held for the capital suspense account and the true market value of those stores. Some of them are not now required for railway purposes and must be sold for what they will fetch. Others are required but are worthless than the figure at which they stand in the books. It becomes necessary, therefore, to write off 3 crores from the Capital account and this can only be done by a charge against revenue. The loss has been accumulated over a series of years and is partly the result of the large rise in prices after the war and the subsequent slump. How are we to deal with this charge of 3 crores ? It is necessary that the loss should be written off at once in order to enable us to arrive at a proper valuation of the East Indian and the Great Indian Peninsular Railways when they are taken over by the State. If we were in a position to do so, we ought undoubtedly to provide this 3 crores out of the revenue of 1924-25. Under the settlements proposed to be made with the Railways, this charge will be taken over by them and spread over a period of ten years, during which there is reason to believe that they will be able to meet it out of their share of surplus profits. Under the old system there is no provision for building up a reserve out of profits, as profits are taken automatically into general revenues for the year in which they accrue. There is, therefore, less justification for spreading the charge. If, however, the whole 3 crores were charged against the revenue of 1924-25, the contribution of the Railways to general revenues during the year would be reduced almost to vanishing point. I trust that the need for deciding this difficult point will be avoided by the adoption by this House of the proposed system of commercial accounting and separation of the railway finances. But in the contrary event, there seems to be no better solution than to set up a special provision of 30 lakhs a year, beginning with 1924-25, to amortise the debt in ten years, and it is only by this unsatisfactory device that the figures of 4.16 crores for Railway net receipts on the present system is arrived at."

Assembly Resolutions.

The following is the full text of the Government resolution on the separation of Railway Finances to be moved by Sir Charles Innes in the Assembly on a day to be allotted next time :—

This Assembly recommends to the Governor-General-in-Council that in order to relieve the general budget from the violent fluctuations caused by the incorporation therein of the Railway estimates, and to enable the Railways to carry out a continuous railway policy based on the necessity of making a definite return over a period of years to the State on the capital expended on railways :—

(1) The railway finances shall be separated from the general finances of the country and the general revenues shall receive a definite annual contribution from railways, which shall be the first charge on railway earnings.

(2) This contribution shall be a sum equal to five-sixths of 1 per cent on the capital at charge of the railways (excluding capital contributed by Companies and Indian States and capital expenditure on strategic railways) at the end of the penultimate financial year, plus one-fifth of any surplus profits remaining after payment of this fixed return, subject to the condition that if in any year railway revenues are insufficient to provide the percentage of five-sixths of 1 per cent on the capital at charge the surplus profits in the next or subsequent years, will not be deemed to have accrued for purposes of division until such deficiency has been made good. From the contribution so fixed will be deducted the loss in working and the interest on capital expenditure on strategic lines.

(3) Any surplus profits that exist after payment of these charges shall be available for the railway administration, to be utilized in (*a*) forming reserves for (i) equalizing dividends, that is to say, for securing the payment of the percentage contribution to the general revenues in lean years, (ii) depreciation, (iii) writing down and writing off capital ; (*b*) the improvement of services rendered to the public ; (*c*) the reduction of rates.

(4) The railway administration shall be entitled, subject to such conditions as may be prescribed by the Government of India to borrow temporarily from capital, or from the reserves, for the purpose of meeting expenditure for which there is no provision, or insufficient provision in the revenue Budget, subject to the obligation to make repayment of such borrowings out of the revenue Budgets of subsequent years.

(5) In accordance with present practice, the figures of gross receipts and expenditure of railways will be included in the Budget statement. The proposed expenditure will, as at present, be placed before the Legislative

Assembly in the form of a demand for grants, and on a separate day or days among the days allotted for the discussion of the demands for grants, the Member-in-charge of Railways will make a general statement on railway accounts and working. Any reduction in the demand for grants for railways resulting from the vote of the Legislative Assembly will not ensure to general revenues, *i.e.*, will not have the effect of increasing the fixed contribution for the year.

(6) The Railway Department will place the estimates of railway expenditure before the Central Advisory Council on some date prior to the date for the discussion of the demand for grants for railways.

Cotton Waste as a Raw Material.

It has been made clear that the so-called "waste" is not waste in the ordinary sense of the word but a very important bye-product forming the sole raw material of a great many manufactures and also an additional raw material to others. Even the very dregs—the sand and cotton seed remaining after the recleaning processes—find a ready sale for manures and fertilizers, a good deal being quite suitable for stuffing upholstery.

As a matter of fact, some of the most valuable textile fabrics are produced from the better classes of waste, and it need scarcely be stated that the proportion of these has tended to increase both in this country and in America owing to the tendency to manufacture the finer fabrics. The introduction of the combining machine has done much to increase the quantity of the finer wastes, and greater efficiency in the preparatory processes generally has been a contributory factor.

The waste recovered from the winding and weaving departments can be so treated that either used singly or in combination with some of the finer wastes some excellent fabrics can be produced, including bed covers, quilts, domestic sheets, towels of first class quality, and flannelette, a special process of spinning giving a yarn remarkable for its softness and fullness.

What are known as the flat and cylinder strips covered from the carding process, possess the requisite strength, in addition to serving other useful purposes, to enter into the manufacture of twine, rope, nets, etc. Egyptian strips are often mixed with wool, and are extensively used by woollen manufacturers both in this country and on the Continent.

The lowest class of oily waste, which comes from the spinning-room floors, after undergoing cleaning and chemical treatment to extract the oil, is largely used in the manufacture of special cotton for explosive purposes. The better grade of oily waste, after careful selection and grading, finds outlets for respinning into low classes of yarn and for mixing with wool in the manufacture of cheap cloth.

Large quantities of waste are used in this country for spinning low counts of yarn. All the lower qualities of spinning waste are graded so as to be made suitable for the production of yarns for the manufacture of sponge cloths, carpet yarns, and low qualities of mixed woollen cloth.

Some grades of waste are mixed with cotton, and others are used very largely for the manufacture of yarns for the hosiery trade. There is also a very large quality used in the manufacture of surgical dressings, etc. Even when floor sweepings are unsuitable for spinning they are bleached and subsequently used for the production of, in addition to explosives, cellulose and artificial silk. Machine-cleaning waste is extensively used by railway and engineering works in all countries. It is composed of thready material which cannot be re-spun, but is roughly carded and made into various grades.

A word may be added with regard to the methods adopted by the waste merchant in conducting his business. The practice of a waste merchant is to buy by competitive tender the output of the waste of various mills for a period varying from three to twelve months. He undertakes during that period to take all waste produced at fixed prices for the different qualities, and he then has to find outlets for his merchandise. In some cases he is able to dispose of some of his purchases for the period he has bought them, but in other cases he may only make spot sales and must, therefore, take the risk of the market. Generally, he has contracts (says the *Manchester Guardian*) with a number of mills and has to collect the waste regularly and put it into suitable condition for resale, as only a small portion of it can be sold in the condition in which it leaves the mills.

Agriculture in the United Provinces, 1922-23.

By "Rusticus".

The Report on the administration of the Department of Agriculture in the United Provinces for 1922-23 appears in a new form. Instead of being in the familiar blue book style, it is a small octavo publication of between 50 and 60 pages and is illustrated by photographs, three in number, one of a tube well erected by the Department, one of the Agricultural College dairy and one of the cane crop on the Kalai farm. The change in the formation of the Report is accompanied by a change in its substance. Instead of being "a somewhat dry record of the activities of the Department during the year" it is in effect, an essay on the aims and objects of the Department. Whilst there has been some gain from the change, there has also, in our opinion, been a distinct loss. For the Report is of so general a character that it is no longer possible either to compare the work of the Department during the year with what it did in previous years or to compare the work it is doing on a particular crop with the work which is being done on that crop in other Provinces. What we mean can best be illustrated by two concrete examples. Appendix I to the Report is a statement showing distribution of the implements and manures during the year. There is nothing to show whether this was on a more extensive scale than in the previous year and the only information on this point is to be gathered from the statement in the Government review of the Report that it was less difficult to obtain agricultural machinery and that prices were lower. Again, we are told that a series of canes have been tested at the Sugar Research Station at Shahjahanpur which yield as much as 1,000 maunds to the acre against 200 to 300 maunds which is all that is yielded by the thin local canes. It would have been of great use to other Provinces, more especially to those immediately adjoining the United Provinces, to know exactly what these canes were. It must also be mentioned that the Report is printed on vile brown papers which renders its perusal most trying to the eyes and that it is published at what, in the circumstances, can only be regarded as the very high price of twelve annas. Personally, we prefer the Madras system under which the popular aspect of the work of the Agricultural Department is dealt with in the Villagers' Calendar which is published at the nominal price of one anna and the more technical side of it is dealt with in the annual Administration Report which gives a clear summary of progress compared with previous years and also facts and figures which enable those interested in Agricultural Department, both inside and outside the Province, to discover exactly what headway the Department is making. One other criticism we have to make. We could wish that Dr. Leake had realized to a greater extent than he does that his Report would be read by people who are not acquainted with the vernaculars of the United Provinces. He reports, for example, that, in connection with the Etah demonstration work, a new implement which has come to be known as the Kharnashak has been developed. "The implement promises to be useful and its adoption by the cultivator is already taking place. It carries the essential features of a small cultivator's implement, simplicity and cheapness and it can be repaired in the village." But whether the Kharnashak is a plough, a harrow or a drill or a mixture of all three we are not told and it is tantalizing not to know.

These criticisms must not be taken to mean that there is not much of the greatest interest in Dr. Leake's Report. He starts with a statement of the distinctive feature of the agricultural system of the United Provinces which is that, although small zamindars are not lacking and, in some parts especially in the west of the Provinces, their number looms large, the prominent fact is that the large landholder is in strong evidence but that he does not cultivate himself. He looks on his estate as a source of revenue from the rents which are fixed and he is only very indirectly subjected to fluctuations of income due to variations in season and price. Dr. Leake holds that it should be the policy of the Agricultural Department to guide him to a full understanding of the potentialities of his estate as a source of income other than from rents. The Department should lay itself to persuade him to invest more capital in it and the best way he can do this is by establishing a home farm of 100 to 300 acres in extent with a developed water supply on which valuable crops, such as sugarcane,

tobacco and potatoes would be cultivated with due regard to rotations. Such a farm would serve as a centre for the supply to the whole estate of water, manure, seed and the like and this supply, as well as the harvest of produce, would be run as a co-operative organization between landlord and tenant. The key to the position, according to Dr. Leake, lies in the supply of water by means of mechanical power from ground water and he therefore puts in a powerful plea for the retention and the development of the agricultural engineering branch which, in the year under review, erected 16 pumping installations and, at the end of it, had 18 under construction. There are now 360 private farms in the United Provinces of which 34 are over 100 acres in area and 76 are between 50 and 100 acres. The water supply is no less important on the small holdings than it is on the big estates but on these the energies of the Department are directed to testing for wells and improving existing wells rather than to pumping installations. In 1922-23, it made 624 borings of which 457 proved successful.

The second direction in which the Agricultural Department can help the cultivator is, of course, by ensuring him a supply of good seed to the importance of which the cultivator in the United Provinces as elsewhere, in India, skilled as he is in other respects, is not yet alive. There is not much in this branch of the Department's activities which calls for comment. It utilizes every agency it can in the good work, the big zamindars and their home farms, co-operative societies, district boards with their newly established agricultural sub-committees and the Court of Wards. Dr. Leake looks forward to the time when the supply of seed will, as in Western countries, be undertaken by a special industry working on a commercial basis but he admits that the development of such an industry is probably distant and that it will be relegated to an even more distant future if the Agricultural Department yields to pressure and supplies seed markedly below the commercial price. For the present, he holds that a middle course must be adopted.

The third direction in which the assistance of the Agricultural College is required is in regard to cultivation and, in the United Provinces though not to the same extent as in the south of India, recent developments have all been in the direction of going to the cultivator's land instead of waiting for the cultivator to come to the Government demonstration farms where, as Dr. Leake truly says, he is overawed by the neatly laid out fields and by the equipment in buildings and machinery which he considers essential to the production of the enhanced yields obtained on the farms and which he knows are entirely beyond his means. We have on so many occasions explained in these columns the proper functions in the agricultural system of the research and the experimental farms and have pointed out so often that the demonstration farm should have no place in that system, the proper place for demonstration being on the cultivator's own land, that it is unnecessary here to summarise Dr. Leake's variation of that theme. All that need be pointed out is that our view of the uselessness of the demonstration farm probably needs some qualification in the special circumstances of the United Provinces whether the demonstration farm has its uses as an example to the big zamindar how to run his own home farm. But it requires no qualification as far as the small zamindar and the tenant are concerned, as the Agricultural Department has begun to realize, for we are told, that a departmental staff has been organized in the Etah district to demonstrate improvements in the cultivators' own fields with a success which has justified expansion to the Agra district and that, as funds permit, the organization will be extended to other districts and circles. It is evident that demonstration work in the United Provinces is still very backward.

The most important work done under the head of "Experiment and Research" was that done on sugarcane, cotton and potatoes though some progress was made with work on rice, oil-seeds, sun-hemp and jute. It is curious that, in the paragraph on sugarcane, no mention is made of the recommendations of the Indian Sugar Committee in regard to the United Provinces and of the possibilities of putting them into practice, an omission which is all the more striking in that Mr. Clarke, the Agricultural Chemist in charge of the Shahjahanpur Sugarcane Station, was a prominent and most useful member of that Committee. We are told, for example, that the development of a more efficient furnace which will do away with the need of any fuel in addition to that which is supplied by the cane itself after the juice has been extracted is being investigated. The Indian Sugar Committee worked out

a design for a furnace to meet this requirement. It would have been interesting to know if the type of furnace they recommended has ever been tried in the United Provinces and, if so, what was wrong with it. In regard to cotton, Dr. Leake says that, as a result of the war, there has been a considerable modification in the class of cotton required by the mills and especially by the local mills. He does not explain in what direction that modification has taken place but presumably cotton of longer staple is required for we can hardly believe that the local mills have taken to using the Aligarh white flowered cotton of which, as Dr. Leake reminds us, a severe critic once remarked that the fibre lacked the first essential for spinning, namely two ends. That cotton has, however, many good qualities, good colour, hardy habit, high proportion of lint to seed and high yield, in fact almost all the virtues except length of staple and so it is satisfactory to see that a strain has been isolated with improved lint which will be distributed as seed accumulates. Other strains which are a great improvement on the local cotton are being distributed, notably K 22, a strain which was bred by Dr. Leake himself and Jn 1, a strain evolved by selection but, in accordance with the principle on which the Report has been written, we are not told the extent to which these have spread.

The work of the Department on potatoes was perhaps the most interesting work it did during the year. No less than four-fifths of the potato crop in the United Provinces is lost every year by the rot which takes place when the crop is stored. This loss is exactly reflected in prices which are Rs. 2 per maund at harvest and Rs. 10 at the end of the season. The Department tried what cold storage could do to stop the rot and has discovered that the loss on potatoes stored in a godown, the temperature of which was brought down to below 55 degrees Fahrenheit, was only 0.4 per cent whilst potatoes stored in the usual way lost 84 per cent. The financial aspect of cold storage has now to be worked out as has also the problem presented by the fact that though the temperature used check rot, difficulties are experienced in checking germination.

Agricultural education in the United Provinces, as elsewhere, is in a transitional stage. The Government have agreed that the Agricultural College at Cawnpore should be affiliated to the Allahabad University but the practical steps necessary to give the affiliation effect have yet to be taken. There is evidence that in the United Provinces, agricultural education is valued for its own sake to a far greater extent than it is farther south. The admissions to the four-year diploma course have gone up steadily since it was instituted in 1914 and were 28 in 1922. Those to the two-year vernacular course have fluctuated between 17 in 1919 and 33 in 1921 and 1922. The College has now a farm of 350 acres which it is proposed to develop on the lines of a zamindari estate run as Dr. Leake would have a zamindar's estate run. In addition to the Agricultural College at Cawnpore, the United Provinces have an Agricultural School at Bulandshaha which is intended for the sons of the small zamindar and the tenant. This, though it corresponds to what we in the south know as the agricultural middle school, presents some novel features. The students cultivate the land on a share system and the produce is handled on a co-operative basis, detailed accounts being kept of all transactions. The school has an enthusiastic Principal and Dr. Leake, to whom the experiment owes its inception, writes hopefully of it. He would, however, like the course which at present lasts only for two years extended to three.

We have long thought that the administration of India is rapidly degenerating into a system of Government by Committees and that that system is no more likely to tend to efficiency in India than it did in Russia. The Agricultural Department in the United Provinces has not escaped the prevalent infection. To the Board of Agriculture, the Cotton Committee and the Cattle Committee have now been added Advisory Committees for all the farms in the Provinces. It is clear that Dr. Leake does not regard the prospect of Committee Government altogether with equanimity. He points out that the financial responsibility for the demonstration farms must rest with the agricultural officer-in-charge of the circle and that his is a responsibility which cannot be shared but that the proceedings of the Muzaffarnagar Committee, the only one which has been working for any length of time, show that the responsibility is one which members of the Advisory Committee have difficulty in realizing. He also points out the danger that the Advisory Committees will restrict the scope of the work carried out on the farms especially on the experimental farms as there

should, in the nature of things, be many investigations of a purely technical character carried on, the utility of which is not immediately apparent to any one except the expert. In short, in the multiplicity of counsellors there is not always wisdom and there is a grave danger of men who know their job being prevented from doing it by men who know nothing about it. We shall watch the future working of these farm Advisory Committees with interest not unmingled with anxiety.

National Forest Policy.

The Association of Forest Engineers of the Province of Quebec at their annual meeting in 1922 decided to attempt to take their proper place as leaders of public opinion in the matter of forest policy. They felt that unless the technical foresters handled the subject of national forest policy it would inevitably fall into the hands of those who were interested in exploitation of the forests for profit only, or that the general public might be lead by propoganda of more or less sentimental character to effect measures which would make it very difficult for wood-using industries to operate, and be in the long run detrimental to the good of the country. At their annual meeting held in Quebec the 18th and 19th of December, 1923, this question came up for further discussion and it was decided that the most important matter was that of fire prevention, and in order to do everything possible they drew up a scheme for the proper protection of the forests which was sent to the Prime Minister of the Province and will later be published. They also drew up a general forest policy for the Province of Quebec with the object of perpetuating the wood-using industries in the Province, safeguarding the watersheds of rivers used for the development of water power, and the general good of the colonists and other interests of the public. The chief points in their recommendations were: An immediate inventory of the forests of the Province which should give the area in forest, the average annual growth, and also recommended the preparation of management plans fixing the possibility of each region or mainly watershed. They also recommended measures which would determine the proper methods of logging to ensure sustained yield and prompt regeneration, and at the same time which would be economically applicable for those industries operating with wood as a raw material. They recommended the creation of forest reserves for those industries already existing in the Province which are likely, without this safeguard, to find themselves short of wood in the near future. They also advised the establishemnt as permanent forest reserves of all blocks of land which shall be determined to be unsuitable for agriculture. To this end it was recommended that an independent bureau of soils be established to make such classification so that neither the Department of Lands and Forests nor the Department of Colonization could be said to have any interest in such classification. They recommended the protection of all the forests of the Province by the most appropriate methods such as proper disposition of logging debris and the study of insect and fungus damage. They recommended that the Government should undertake the reforestation of land unfit for cultivation, drifting sands, and other waste sections. The creation and protection of forests on the heads of rivers used for the development of water power and finally an active forestry propoganda.

The meeting expresesd itself unanimously in favour of an embargo on the export of unmanufactured pulp wood both on public and privately owned lands, provided some means might be found by which the wood-using industries would undertake to absorb wood cut by colonists. A letter was addressed to Premier King protesting strenuously against the Order-in-Council postponing the imposition of an embargo for ten years.

A resolution was also adopted requesting the Department of Lands and Forests to issue a yearly report giving the results of its nursery and sylvicultural work, explorations, growth-studies and so forth, for the benefit of the forestry profession and the public at large.

His Highness the Mehter of Chitral has granted a lease to work minerals in his State to Mr. C. I. Parekh of Bombay. The lease is to run for a period of thirty years. Chitral is reported to contain various minerals, such as lead, copper, silver, gold, quicksilver and oil. There are also said to be precious stones there.

Agricultural Education.

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I cannot help feeling that the object of my remarks is still somewhat in a tentative condition, and it may be better if I reserve a formal exposition of the subject so that all I have to say may be regarded by way of stimulus and suggestion rather than a direction to a particular action that I should like to see taken. This must be the case with all good teaching. The teacher has to work out a method, that method may not be a good one for universal adoption, but if a man has worked it out for himself and is keen, the very fact of his keenness may make that method an extremely profitable one.

Closer Consideration of the Method of Teaching.—What I have to bring before you is this, put broadly, that the actual method of our teaching, whether we teach inside the college or the farm institute or whether we teach in the country, requires more consideration than it ordinarily gets. We all of us in this country begin teaching agriculture in a thoroughly haphazard amateurish fashion. We go to college and later on when we leave, we find ourselves put in front of a class and required to teach in our own account. I think most people's experience would be similar to mine; no one gave me a hint or suggestion of what methods to follow—I floundered about and tried one method after another.

Many scientific and technical men have a certain scorn for what generally may be called the art of exposition, whether in speech or writing. In writing I have often occasion to deplore the style and quality of the written matter that is put out. In teaching I have from time to time listened to lectures and classroom instruction, and I do not think the teaching might be enormously improved if the men thought a little more about this matter of teaching as an art in itself, independent of the material that is to be set forth, an art which has a code of rules and laws of its own. I do not want to lay down methods at this moment. Every man will think out his own method, but I do want to plead for a consideration of the method itself as something worth thinking about, something by which the work—whether it is in classroom or lecture room—can be made more effective. I want you to take it that teaching is not a process into which you drop quite naturally, that it only involves the doing out of so much information to be got up by the class, whereby all the teacher can be expected to do will have been accomplished. If that were the case, if there were nothing in the functions of the teacher but to hand out a certain amount of knowledge, why have any oral teaching at all? Why not content oneself with books, or with some kind of organization like the correspondence college? The organization of a correspondence college for example can show the student exactly what he ought to read, it can set him papers, mark and comment on them. The way these colleges flourish proves that they can be effective in promoting the acquisition of knowledge for examination purposes. In fact one must take that the very existence of these correspondence colleges on a large scale points out that there is a defect in the ordinary teaching given in the country. If the oral teaching were of the right kind the correspondence college, which gets its results and could not live if it did not get its results, would go out of existence.

To give an illustration of what I mean: you are all familiar with one of the very commonest forms of classroom teaching in University or University College—the lecturer who practically dictates to his students a certain text which he has prepared. The lecturer prepares very carefully his lecture as a résumé of a particular section of the subject and delivers this from the platform so that every student may take it down verbatim and get it accurately transcribed into a notebook. That form of instruction is very popular, especially amongst students. It supplies them with a short-cut to knowledge; it absolves them from the necessity of reading anything other than their notes. They need not buy text-books; still less need they compare the different views of other people on the subject, and they regard this as a

* The substance of an address delivered before the Agricultural Education Association at Aberystwyth. We owe the address to the courtesy of the *Journal of the Ministry of Agriculture.*

very profitable form of instruction. If they get up the notes which the professor has given them they expect to be able to pass the required examination. One knows the type of lecture note-book which is produced in that way, and I believe in some of the Universities it has considerable financial value. That always reminds me of a story of a Cambridge undergraduate in the time of a very famous coach known as Big Smith. The undergraduate had just come into residence and was taking counsel with some senior friends as to what course to pursue, should he read for Honours or a Pass. He asked what was the difference between a Tripos and a Poll degree. The old hand replied "if you go for the Tripos go to Brown, of Trinity, and he tells you what he thinks about it ; then you go to Jones, of Jesus, and he tells you what he thinks about it ; then you go to Tomkinson, of Caius, and he tells you what some other Johnny thinks. If you take a Poll you go to Big Smith and he tells you what it *is*." That is the attitude of the typical undergraduate ; he wants positive knowledge delivered to him in neat little packets ready to be handed over the examination counter. I submit, however, that the teaching of that kind will eventually be replaced by the gramophone. It would be cheaper to the University to replace such professors by gramophones.

Of course there is the converse of the process, where the lecturer refuses to allow his students to take a note at all. That was my own practice in the later days of my actual teaching career. I was asking my students for their attention ; I did not want them to divert their attention by taking notes. The object of my lecture was to impart a point of view and to get my students to apprehend the principles of the subject. So far as notes went it was my practice to issue a typescript at the end of the lecture, which contained subject headings, tables and diagrams, and references to the text-books indicating where details of the matters dealt with could be found. I do not say mine was the right way but it was an attempt to teach, whereas the other way is only an attempt to supply information. I throw out that as an illustration ; the point I want to make is that the mere process of teaching does require thinking about.

On the other side let us take the outside lecture, the lecture that every college or institute teacher is required to give from time to time to audiences in villages and country centres. As a rule the preliminaries are organized for him ; he walks into the place and is rather apt to suppose that if he delivers the lecture and the people do not leave the room in too large quantities during the process, that his method is good. If the audience falls off during the lecture course, he blames the organization.

But we have to ask ourselves whether the lecture method is suited to the village audiences at all, whether the type of teaching we have to do in the countries has not to start from an entirely different point of view. I want to suggest that the prime effort of the extramural teacher must be in some way to drag the members of the audience into the fray themselves. They must be led to become active participators in the process of education. You have not much time in dealing with an audience of that description ; you are running over the whole of agriculture, perhaps in six lectures and you only have time for stimulus. The technique of the process by which you can get your pupils to read and work for themselves does require a good deal of consideration. Put yourself the question, "How am I to get my audience to help themselves ? I, in charge, can only help people, I cannot teach them : I can only point out the lines upon which they can teach themselves."

How we can Improve our Methods of Teaching.—I take these as illustrations of the kind of subject I should like to see discussed, the methods of teaching inside and outside the college, how, by thinking for ourselves, we can improve our own methods. I want specifically to suggest the question of how the subject of agriculture itself ought to be treated in our Colleges and Farm Institutes, etc., because there I can see perhaps the greatest opening for better technique and indeed for some considerable reconstruction of our aims in teaching agriculture.

I think we are inheritors in this country of rather a mistaken tradition. I know quite well 30 years ago when colleges began to start in Great Britain for the teaching of agriculture, the general idea of their founders was that agriculture could be regarded as an assembly of applied sciences. There was chemistry, botany, zoology, geology and so forth, all sciences throwing light upon the growing of crops and the feeding of animals. If we first taught these sciences to agricultural students and then the application of those

sciences to agriculture, we were teaching agriculture. You may remember that the first Cambridge diploma did not proceed further than that. It was content with an examination in applied sciences and treated agriculture itself as one of those rather mechanical extras which are pursued in practical life but which should hardly concern the university. So I think we were given a set towards the treatment of agriculture as just an assembly of applied sciences, and it was conceived that we could bring out a farmer by grounding the youth thoroughly in chemistry, botany, zoology and so forth.

Now agriculture is a subject *sui generis*, something, quite distinct from an applied science ; it has its own technique and methods and its own fundamental science, which is neither chemistry, botany nor zoology, nor anything of the kind popularly termed science. It is accountancy which lies at the basis of the teaching of agriculture, and as pure chemistry is the grammar of the agricultural chemist and botany of the agricultural botanist so is accountancy the grammar fundamental in the instruction of the farmer.

The Object of our Teaching.—If we start off with that somewhat one-sided statement we shall get a little nearer to what is the right form of teaching. Let us begin by asking ourselves what we are after when we are dealing with the young men in an agricultural college. What is our object ; what are we going to try and turn out ? I think it is agreed that we are not thinking of turning out teachers, officials or that kind of man ; we are thinking really of turning out a thoroughly equipped farmer and we want to ask ourselves what we mean by that—a thoroughly equipped farmer under modern conditions, and how we can help to ensure that type of man by education. We know well the old farmer who has no education behind him ; he tells the teacher that no one can learn farming in a classroom and that he has no opinion whatever of book farmers. The answer is not easy, but I think we can remove that kind of reproach if we take our teaching of agriculture from a somewhat different angle. What he means is that success in farming depends upon a number of qualities which are personal and many of which are only obtained by experience. If a man has no will or determination, if he lacks a certain firmness about making a bargain, of course he cannot become a successful farmer—and none of the efforts of the educator are directed towards giving these qualities.

Still, putting aside these inborn faculties and the essential matter of experience, what does characterise a good farmer as distinct from a bad farmer ? We can sum it up in one word—management. The good farmer not only knows what work had to be done, what good work is, the technique of growing his crops and breeding cattle, etc., but he knows how most effectively to dispose of the staff of labour that he has on that particular land. His job as farmer is a manager. The agricultural college is dealing mainly with men who are going to be managers of labour, directors of other people's work. They are not going to do manual work themselves, except perhaps in their young days, but in the main they are going to be heads and not hands.

Developing the Idea of Management.—When you turn to compare the successful with the unsuccessful farmer you will probably find in a great many cases that the question of financial success depends upon this disposal of labour more than anything else. We may sum up the object of the agricultural college as the training of managers. That being the case what I want to submit to you is that we must direct our teaching to that end.

Suppose we turn to one of the most successful text-books on agriculture that we have in England, the late PROFESSOR FREAM'S—almost the only widely distributed text-book that has been written in English on agriculture—do you find that point of view, management, set out from the beginning of the book to the end ? There may be an odd chapter or two about it, but in the main the book is concerned with the description of the materials of the farmer. You are told how to discriminate between fescues and poas, hop trefoil and yellow clover—just the kind of things that are so much taught and learned by the agricultural student and so heartily despised by the old type of farmer. The old farmer is wrong ; you cannot know too much of anything. None of these descriptive points are without their value, only they cannot replace the other things, the vital study of the economics of a farm and its management. That is the point that I want to bring forward in these remarks.

The teaching of agriculture as I have seen it, and I speak from experience, is far too much a mere matter of description. It may

not even be descriptive of the kind of farm the teacher knows himself, it may be a discussion on the old systems of farming. It is not unknown that men continue to teach the East of Scotland form of agriculture as described in STEPHENS' "Book of the Farm" as the only method of successful farming. It may have little to do with the farming that was going on round about the college, having been worked out on a different rotation and for a different soil and climate. Let us have done with this purely descriptive teaching of agriculture.

The teaching of agriculture should be to an increasing degree a matter of personal experience, and it should be in every district largely based upon what is going on round about the college. It should begin as a description, so far as it is descriptive, of the farming practice amongst the people the student comes from; that is the first thing; let us localise our teaching. In this way the teacher can introduce the element of personal investigation; he begins by finding out what the people round about are doing, that will lead him to comparisons of their methods with other people's methods. He can fall back on the standard system of his text-book, compare it with the local system and discuss the difference that he finds between the two. The critical faculty is brought into play.

But we must go a step further if we have in view management, so that the student, when he leaves the college and begins to work on his own account, shall be in a position to be critical of the work that he gets done, and not merely in the hands of his foreman or bailiff. We must not be content merely with describing. We must ask ourselves about each of the processes, how many men, how many horses, how much time, what will it cost step by step, and criticise these costs in the light of the results. Here the real critical process comes into play. The agricultural teacher dealing with, say, the potato crop, should have acquired for himself, by direct observation, a picture of the practice of a successful potato grower under certain conditions. He has followed the crop through, he has found out the number of men at work and the amount they did, and he is in a position to sum up the costs. That alone is a description which may be of great help to a student later on. But if he can set alongside that a description of the methods of two other equally good farmers and in different districts with the details of the alternative operations, the number of men on the job and the costs, I should think he is entering his students in the art of being managers. That is the first step. It has not got to end there.

After the teacher has been through the raising of crops and the treatment of live stock as individual operations, he has got to get his students into a perception of how a really good farmer schemes out of his work from week to week, and how, given a certain staff at his disposal, he uses them to the best advantage. From my own observation of practical farming there lies the difference between the successful and the bad farmer—the way in which a good farmer has his work planned out and with a given staff always is ready to throw in his strength at the right moment. Of course you cannot fetch that but you can awaken the student very much to the necessity of thinking it out for himself.

It is in that connection the college farm is going to be most useful for the purpose of the teacher. The college farm should be run as a practical business proposition which is illlustrating management and which is a text-book of the teacher in the lessons he is giving. Every student should keep an exact diary, week by week, of the operations that go on on the college farm, and it should be a diary with full details. It does not record "March 15th, sowing barley on the 10-acre field." No, he says "sowing barley on the 10-acre field; wheat stubble ploughed in November, wanted more frosts, a little stale on top and wet below." Then should follow the operations, the horses and men to each and the time taken. Further, the teacher should be giving the actual cash tranaactions from week to week. The teacher taking his class on Monday morning will say "our business during this week is so and so, I propose the men shall do so and so," and he shows them how he has schemed out the use of his staff during the week and the alternative in case the weather is unfavourable. It is in this way we can make our agriculture itself scientific, and not merely descriptive of accessory scientific facts which may be of value but which are of secondary importance compared with the question of management.

When we get on to the second and third year of teaching we have to consider broader economic questions: the reason for this or

that branch of the business, why we are producing milk, why we are fattening bullocks, etc. We can begin with a consideration of the policy of the college farm, for it is the one which is close at hand, the one about which the teacher has the most details. But neighbouring farmers are generally willing to help the college by disclosing enough of their accounts to give the teacher materials for the discussion of the policy. Now this means that agricultural teaching should be founded upon a system of cost accounting. The feature of efficient management depends fundamentially upon a good book-keeping system to begin with, and the constant use of that book-keeping to check operating costs, so I think that the student must be inducted early into the point of view of cost accounting.

We are apt sometimes to assume that we can describe the right method of farming. I do not think there is a right method of farming, there is only a best compromise to adopt under given circumstances as regards soil, climate, markets, etc. The teacher's object should be to get the student into a critical way of examining other people's work so that eventually he will pass on to criticise his own work. The machinery for this is only to be supplied by a sound system of costing. Therefore the teacher of agriculture should investigate costs for himself so as to establish a comparative system of teaching compraring A's methods with B's methods and discussing with his class how relatively they arrive at the same ends though one may cost a little more. He is then in a position to criticise the whole conduct of particular farms, always with the management in view, and the results in cash as the fundamental test of the rightness or otherwise of the operation.

I do not think I need say anything more. I could have elaborated but I rather want to throw out these suggestions for you to turn over for yourselves and see if they will not strike on your box and modify the methods by which you teach. I am convinced that if you think about these points of the technique of teaching, you can make your work more effective.

Burma's Mineral Wealth.

It is reported that a rich silver and lead mine has been discovered at Heho, near Kalaw, in the Southern Shan States, and that the proprietary rights have been acquired by Messrs. Steel Brothers and Co., Limited, one of the leading mercantile houses of Rangoon with head office in London. Already Burma has one of the greatest silver and lead mines in the world in the Northern Shan States. It is worked by the Burma Corporation, Limited. The output of lead from this mine last year was 39,214 tons, valued at Rs. 1,41 crores. The yield of silver totalled 4,205,584 ounces, of the value of over a crore of rupees.

Discovery of Coal.

Another recent discovery is what promises to be an important coalfield in the Mergui district of Southern Burma. The lessees are the Burma Finance and Mining Company, Limited, Rangoon. It is estimated that this field contains between 15 million and 20 million tons of coal, which appears to compare favourably with the class of coal imported into Burma from Calcutta. Actual working tests are now being made with this coal by the Burma Railway Company, Limited, and also on the ships of the Irrawaddy Flotilla Company, Limited; and if the quality turns out to be right Burma will probably have no further need for Bengal coal.

Block Tin and Iron Ore.

The total output of block tin in Burma last year was 217 tons, and of tin ore 2,278 tons. The corresponding figures for the previous year were 171 and 1,972 tons. The output of iron totalled 27,680 tons, all obtained in the Northern Shan States. These figures are some 22,000 tons below those of the previous year.

Petroleum Production.

The production of petroleum was 281,000,000 gallons, against 296,000,000 gallons in the preceding year. The quantity of jadeite produced was 7,724 cwt., valued at Rs. 8,69,340. The output of rubies was 93,078 carats valued at Rs. 6,45,305, but this value does not include that of the exceptionally fine ruby of nearly 23 carats, for which it is expected a very high price will be obtained. The Burma ruby trade has been severely hit by the Continental synthetic ruby, which not only finds a market in the chief towns of the world, but is actually imported into this Province even to Mogok, and, it is to be feared, sold as the genuine Burma article.

Sandalwood Oil.

By B. Sitaramachar, B.A., B.C.E.,

Managing Director, Essenflour Products, Ltd., Mysore. *

Sandalwood oil, or, as it is known in the U. S. Pharmacopœia "Oleum Santoli," is a volatile oil distilled from the heart-wood and roots of *Santalum album* of the family *Santalaceæ;* it is known in commerce as the East Indian sandalwood oil. The tree *Santalum album* is a native of the Province of Mysore and the surrounding British Indian districts of Malabar, Coimbatore and Coorg. It is an evergreen tree, which grows wild, attaining a height of from 30 to 40 ft., but rarely more. The habitat of this tree is parasitic, *i.e.*, the roots of the tree attach themselves to those of the surrounding plants and shrubs and through them it draws the nourishment necessary for its growth, eventually killing the very trees which gave it its sustenance. We thus see the sandalwood tree growing wild in abundance in shrub jungles and forests where the undergrowth is thick. It is perhaps due to the parasitic habitat of this tree that the attempts of the Forest Department of the Mysore Government to grow these commercially valuable trees in plantations met with but little success.

Of late years, a form of blight known as "spike" is doing great havoc among the sandalwood groves in both Mysore and the surrounding districts. Young plants are very prone to the "spike" contagion, and I have seen in the Hunsur area hundreds of sandalwood trees dying away from an attack of spike. The nature of this disease, its causes and prevention, is being studied by experts, but so far no workable antidote has been found. While on this subject of the spike disease, I wish to refer to the work done by Mr. K. G. Menon, Conservator of Forests in Trichur (M.P.). He had under observation a number of the isolated sandalwood plants showing no signs of spike, and opines that though the roots of the tree show haustorial attachments with the roots of other plants that happen to be nearby, the parasitic habitat is not obligatory. He seems to think it more a luxury. Whatever that be, it is, however, a recognized fact that the *Santalum album* grows wild in nature as a parasite, and that all attemps to grow the tree in plantations have met with little or no success. We must therefore depend for our supplies on the inscrutable workings of nature, and I am glad to state that Dame Nature is quite bountiful to us in Mysore, in spite of the ravages of the spike in certain areas.

There is one other source of the supply of the wood *Santalum album*, and that is the Dutch Indies. It is found in Timor, Celebes and Sumba (Sandalwood Isle); Macassar is the commercial centre and hence the name Macassar wood.

Difficulties Met with by Distillers.

Very often woods other than the real *Santalum album* are mixed up in export lots with the result that it is very difficult to get the genuine oil from the distillation.

The only countries, then, that produce the genuine *Santalum album* are the Province of Mysore, a few of the surrounding districts and Dutch Indies. Among these, Mysore stands pre-eminent both in regard to the quality and the quantity of wood produced, being nearly 75 per cent of the wood from all sources. There are, however, on the market a number of so-called "Sandalwood Oils" distilled from the wood of trees which are botanically different from the *Santalum album*.

Preparation of the Woods.—"Oleum Santali" is, as I said in the beginning of the lecture, a volatile oil distilled from the heart-wood and roots of the tree *Santalum album*; everything depends therefore on the quality of the wood and the methods adopted in its preparation. In this respect, even before the Government of Mysore started distilling the oil in their own factories, they took the greatest possible care. Fully matured trees which showed signs of a natural death from old age are collected by the State Forest Department; the bark and soft wood are then removed. Sandalwood so prepared is then sawed into billets, sorted again and stocked in the depots, of which there are many, classified under the following main heads:

(1) Roots; (2) Billets; (3) Jajpokal: (4) Chilta; (5) Sawdust.

There are a number of minor classifications in each of the above, but I do not think it serves any useful purpose to enumerate them here. The main object, however, in

* Abstract of a Lecture delivered before the College of Pharmacy, New York.

so classifying the wood, was and has been to properly value the wood on its oil contents primarily and on its usefulness for other purposes such as carving panels, manufacture of ornamental boxes, etc.

On account of its fragrance and medicinal properties, sandalwood has been held in high esteem from time immemorial, and I would even go so far as to say that it is considered a sacred wood. In most Hindu ceremonial functions, religious and social, sandalwood is a necessary adjunct; in a powdered form it is used in the offering of incenses to the gods, and in the form of a paste, obtained by wet grinding the wood on a circular slab of sandstone, it is offered as a perfume. In the cremation of the dead sandalwood is mixed up with the fuel by such as can afford the expense. The Parsis, who, as you very well know, are fire-worshippers, use the wood in large quantities in keeping their sacred fire lit eternally. Medicinally, also, the uses of sandalwood are very varied and, without taking much of your time, I shall just mention a few. The paste, as obtained by grinding the wood, is applied to all forms of cutaneous diseases with marvellous efficacy. In parts of India where, in summer, a temperature of 105° to 106° F. is not uncommon, a milky solution of this same paste is smeared all over the body to allay the heat eruptions. From personal experience, I could vouch to the fact that it is indeed very soothing and pleasant.

In this connection I am reminded of a story I recently heard in Mysore, indicating that even wild animals have an instinctive knowledge of the medicinal properties of this wood. Some of the forests in Mysore abound in elephants, and it seems that, whenever these huge beasts are suffering from eruptions or ulcers caused by the forest heat, they tear open the heart wood of a mature sandalwood tree with their tusks and rub the afflicted portions against it. I have never had the good luck to see a wild elephant doctoring itself in this manner, but, judging from the fact that the elephant is one of the most intelligent of animals, the story is not after all so very improbable. At any rate, it is not an impossible feat for the sort of wild elephants that I have seen in Mysore.

Up to the year 1916, the Government of Mysore was selling the entire output of sandalwood produced in its forests by public auctions held in the several depots once every year. During the pre-war period most of the wood was bought by German distillers; consequently the auction sales during 1915-1916 brought very few bidders to the auctions held during that year. As this resulted in the reduction of the revenues to the State, the Government of His Highness thought it desirable to start a factory of its own to distil the oil and thus make this industry independent of Germany. In the month of May, 1916, the first distillation took place in the factory located in Bangalore.

Encouraged by the results obtained in this factory, a bigger one was built in the city of Mysore to cope with the increasing demands for the Government distilled oil. Nearly three-quarter million pounds of oil have since been produced in the two factories, of value slightly in excess of a million pounds sterling. The world-wide appreciation of the Mysore Government sandalwood oil has been made possible by the methods adopted, and equipment used, in both the factories. The wood used for distillation is the heart-wood selected from the mature trees, the equipment is most modern and efficient and the processes are under the care of fully qualified chemists.

I have here a sample of the Mysore Government distilled oil; it is a thick, pale yellow oil, and has the true odour of the natural wood from which it is distilled. It satisfies the requirements of the U. S. Pharmacopœia in all respects, analyzing as follows:

Sp. gr.—0.965 to 0.980 at 25° C.

Optical rotation—15 to—20° in a 100 mm. tube at 25°.

Refractive index—1.5045—1.5095.

Total Santalol $C_{15}H_{26}O$ } 90% (91% to 94%)

Solubility: It is soluble in 70 per cent alcohol, forming a solution which is slightly acid to litmus.

The chief constituent of sandalwood oil is the alcohol known as santalol, and this in turn seems to be a mixture of two isomeric alcohols known as *a*-santalol and *b*-santalol. The characters of these isomers are not fully established, and different workers give different characters to them. About ten other constituents have been isolated, all or most of which are not of commercial importance.

[In view of the remarks offered on Spike by Mr. Sitaramachar, the following summary of a paper on the Cause of Spike in Sandal (*Santalum album, L*) read by Mr. P. S. Jivanna Rao, before the last Session of the Indian Science Congress, will be read with interest:—

1. INTRODUCTION.—The paper is in continuation of the author's studies reported in the Indian Forester for 1921, 1922, 1923, where it was maintained that spike is a physiological phenomenon not caused by parasitic organisms or virus.

2. HISTORICAL.—The two main theories regarding the true cause of the disease are stated, *viz.*, (i) that the disease is infectious, and (ii) that it is physiological and not infectious.

3. THE PARASITIC HABIT OF SANDAL AND ITS BEARING ON THE QUESTION OF SPIKE.—Evidence is given in support of the view that the sandal is an obligate parasite.

4. EXPERIMENT.—A sandal tree about ten years old was trenched in such a way that the roots of itself and its hosts were seriously damaged and this resulted in the shortening of the leaves and the accumulation of starch in them. This is believed to be due to shortage of water-supply to the plant consequent on the harm done to the roots.

5. THE VIRUS THEORY IN RELATION TO SPIKE DISEASE OF SANDAL.—This theory based on grafting methods is examined and criticised.

6. CONCLUSIONS.—From all the evidence available it is concluded that, as the actual spike condition is attained by a process of starch accumulation in the plant and this has been experimentally possible, it in nature arises when the hosts fail to supply nourishment being shorter-lived than sandal or being otherwise unsuitable. The author thus holds that want of ('good') hosts really serves as a limiting factor for the best growth of sandal and points out that the remedy for spike lies in tending the hosts which is of "far greater importance than any amount of care that may be bestowed upon the parasite."—ED., *M. E. J.*]

Bomboo Pulp.

The Officer-in-charge, Paper Pulp Section, Forest Research Institute, Dehra Dun, has drawn up a report on a project for manufacturing paper pulp at Cuttack. The local Government, who have authorized the publication of the report, take no responsibility for the opinions expressed. The proposition contemplates the manufacture at Cuttack of paper pulp from bamboo grown in the forest division of Angul and neighbouring States and floated down the Mahanadi River to the factory side. "There exists," he writes, "an important limitation to its scope which it will be well to deal with at once in order to confine this report to the field of opportunity which appears to be open to it. Owing to its distance from a seaport (Calcutta or Vizagapatam), it is not an exporting proposition. Elsewhere in Burma and India locations are known where such factories would be situated on tidal water in close touch with ocean-going steamers direct from factory wharf or with only a short distance of lighterage. Such establishments will be exceptionally well placed for the foreign export of their product; with them an inland factory handicapped by a considerable rail freight in order to reach the sea could not compete. On the other hand, for the supply of the domestic or local market, Cuttack seems to be exceptionally well situated." Everything points to the destiny of Angul being that of a feeder of local paper mills. The most economical size unit of a pulp mill is one yielding a production of about 10,000 tons dry pulp per annum. It is governed by the capacity of the drying machine, the most costly item of outfit. A dryer for 5,000 tons costs almost as much to run as one of double the capacity, and the expensive technical staff required to run the lesser quantity can quite easily turn out the larger, so the ton cost of the former is considerably more than the latter.

Lord Haldane's outline of his views on Democracy and Education, in the *Sunday Times*, is a vigorous plea in favour of the ideal that "democracy should feel itself better provided with chances of enlightenment". The more extension of suffrage, as for instance, by the removal of the sex disqualification, means little to him, so long as there are millions in the State who are mentally and morally unfree. The expressed programme of the Labour Party touches, according to him, the surface of the problem. "A sane and ordered Society to oppose the squalid materialism that dominates the world to-day and to hold out their hand in friendship and goodwill to the struggling people everywhere who want only freedom, security and a happier life"—this to him represents the real aim of Labour.

European Currency Fluctuations.

By G. Ward Price.

International conspiracy has always been one of the world's pet bogies. In the Middle Ages established authority was ever on guard against it in matters of religion. Later on its existence was suspected as the origin of any new form of political unrest.

Even now responsible people emphatically assert its presence in connection with the fluctuations of national monetary values.

"There is a society operating abroad, which manipulates the fluctuations of European currencies," was the statement made publicly by General Primo de Rivera, the Head of the Spanish Government, a few days ago, referring to the sudden fall of the peseta from 33 to 35 to the pound, and its equally sudden recovery to 32.50.

The French Press daily attributes the recent rapid decline of the franc to the machinations of "international financier," whose headquarters it variously alleges to be London, Berlin, Amsterdam and New York.

Early in the present month, for instance, the Moorish rebels in Spanish Morocco made a sudden attack and cut off one of the Spanish outposts from its base. The situation was soon repaired, but for a day or two, until a relieving column had forced its way through with supplies, messages which have since proved unduly pessimistic found their way into the Press.

The Cause of Exchange Fluctuations.

Commenting on this fact, the principal newspaper of France, the *Temps*, has made the definite statement, which has been widely reproduced and believed in Spain, that such messages reached London by wireless from a small steamer equipped with a powerful transmitting set, which was lying off the Moorish coast. The story which this influential French newspaper suggests to its readers all over Europe is that some group of anonymous international exchange speculators deliberately sent a mysterious vessel to the Mediterranean to enable them to make money by stirring up public anxiety with regard to Morocco.

The idea might be an excellent one for a cinema scenario, but, like so many of the statements made in explanation of exchange fluctuations, it lacks solid evidence to support it. Picturesque though it is, the vision of a group of hard-faced men of cosmopolitan origin sitting in a richly-furnished office making fast fortunes almost instantaneously out of a few fake telegram messages is difficult to harmonise with the facts of life and the money market.

Undoubtedly, early news concerning event of far-reaching political consequences is invaluable to big financiers.

But in modern times the collection of information is well organized in every part of the world, and communications are so rapid, that it is very difficult for any money-merchant to obtain exclusive knowledge of a big event.

The fluctuations in exchange, which are so perpetual and puzzling a pre-occupation of the present-day traveller, owe their origin to more prosaic causes.

The most powerful and obvious of them is the balance of trade—the relation between a country's exports and imports.

When a nation is buying from foreign countries more than the value of the goods it is sending abroad, it clearly has to pay for the surplus in money of the countries from which it is importing, and competition among its own merchants to buy those currencies for this purpose has the effect of depreciating the exchange value of its own.

There are modifications, of course, to this bald statement of the case. When a nation has large investments abroad, earning interest, like Great Britain has, for instance, its imports may exceed its exports without bringing down the value of the State currency, for some of the excess-imports is only the foreign-earned interest coming home in the form of goods.

Before the war, when world-trade was regular and established, rates of exchange varied little from this cause. They could even be laid down with approximate certainty in travellers' guide-books. For whenever any small fluctuation showed signs of manifesting itself here or there, the international banks quickly compensated it out of existence by means of the operation known as *arbitrage*, which means buying or selling foreign currency wherever favourable margins appear, with the result that the whole system stays steady.

These dealings by the banks implied, however, confidence in the intrinsic value of the

currencies dealt in. It is the disappearance of this confidence in so many cases that has brought about the fever-chart fluctuations in exchange values we have known since the war.

Effect of Bank Combines.

The effect of this lack of faith on the part of bankers in the currencies of many European countries has further become more violent and pronounced in character through the constant process of big amalgamations in the banking business.

Banking in Germany is now concentrated in the hands of what are called the five "D" banks—the chief being the Deutsche Bank, the Dresdner Bank and the Disconto Gesellschaft. In Great Britain Lloyds, the Westminster and the Midland Banks have absorbed a dozen banking firms that used to be separate concerns independently conducted.

Now, the exchange markets of Europe are few. The dominant ones are London, Paris and Zurich. So that the operations of the handful of great banks that now monopolize that business in Europe are concentrated in their scope, and produce considerable reactions in the money market.

In general, despite the firm belief of the French nation that the franc has been forced down by artificial pressure, these operations follow upon a scientific and impartial estimate of the world's financial situation at the moment. Sometimes, as has been noticed recently in the United States, small banks will try to bring exchange business into their hands by using political arguments to their clients—urging German-Americans to sell French francs short, with a view to depreciating French currency.

But a more potent case of the fall of the franc than any such manœuvres is the hard fact that France has not been balancing her Budgets or meeting her debts since the war. Burdened with the task of reconstructing her devastated regions, she has constantly raised internal loans—and met the interest on them by new loans—in the hope that all these liabilities will eventually be lifted from her by the payment of German Reparations.

It is such considerations, rather than mystery ships with wireless, that determine the rise and fall of currencies.

Mineral Wax Production in Poland.

Poland possesses the only commercial deposits of mineral wax (ozokerite) in Europe. They are located principally in the Boryslaw oil region in Galacia, though smaller deposits have been found in the neighbouring Stanislawow oil region. Polish geologists report the discovery of rich deposits in the Truskawiec region, and a Polish corporation has undertaken the development of these new fields.

According to data collated by the United States Bureau of Foreign and Domestic Commerce, wax mining in Poland dates back to 1860. The work was commenced by Polish and French Corporations, but at the present time most of the capital is in the hands of a corporation controlled by a Vienna bank. Early statistics show that in 1876 production reached 8,750 tons, and up to 1888 the yearly production ranged from 8,000 to 9,000 tons. The production has since been on the decline on account, it is stated, of serious restrictions imposed by the controlling authorities.

The following production figures, for specified years, show the decline that has taken place in the industry :—

	Tons.		Tons.
1809	5,420	1914	810
1899	7,740	1915	59
1910	2,150	1920	380
1913	1,580	1921	260

As production decreased, especially during the war period, prices increased.

The colour of the wax ranges from dark green to black, depending upon its purity. The average grade of mineral wax melts at 62° C., and is easily purified. Until a recent date the raw material was exported, but now it is being refined by a Polish concern.

In 1920 Poland exported 660 tons, divided among the following countries: Germany, 260 tons; Austria, 220 tons; Switzerland, 90 tons; United States, 40 tons; England, 30 tons; Czechoslovakia, 20 tons. In 1921 the exports decreased to 195 tons, of which 100 tons went to Austria, 75 tons to Germany, and 20 tons to Czechoslovakia. The high prices tended to decrease the foreign demand and exportation was also hampered by smugglers, who mixed wax with paraffin and sold it as the pure product.

Co-partnership in Industry.

The idea that profit-sharing or co-partnership in industry is desirable is no new theory. It has been advocated for many years by those who desire that the workers should have some direct share in the success of the businesses in which they work. Many schemes have been suggested and tried, and some have succeeded, though many have failed. A slight drop in profits may cause the surplus profits, on which the distribution is based, to disappear, and if there be no profits to share for a few years, the workers lose faith and beleive the scheme to be valueless, and it is often abandoned.

A scheme often suggested is (says Mr. W. H. Hazell in the "Times"), that, after a fixed dividend has been paid to capital, the balance of the profits should be shared in some agreed proportion between capital and labour, by a further dividend to capital, and a bonus to labour, based on the wages earned. Although this method has the advantage of simplicity, it has the drawback that it may be desirable or necessary to set aside considerable reserves for depreciation, bad debts, etc. This cautious financial policy would reduce the profits available for distribution, and labour might imagine that the management were purposely avoiding any distribution of the profits in order to create reserves for dividends in years of bad trade.

Another difficulty that arises in an old-established concern is that many of the shareholders or proprietors have purchased their interest in the business at a premium, and the yield on their investment is comparatively low. In such circumstances they would probably require, before agreeing to share the profits with labour, that the dividend reserved for capital would be the average of the preceding years. This basis would mean that there would only be profit-sharing in exceptionally good years, and many years might elapse with no distribution.

Another scheme sets apart a proportion of the profits, which are capitalized and distributed amongst the workers, who have no power to sell the shares.

Other Methods.

Other methods of profit-sharing have been tried, all of which, however, have been based on the principle of a distribution of some of the profits, without any greater effort on the part of the recipient than is required from all the employees by the management.

The average working man is a sturdy, self-reliant individual, and anything that can be done to stimulate his independence and encourage him in self-help is of value and strengthens a desirable trait of English character. A scheme of co-partnership which would require an effort on the part of the worker to provide part of the capital in the business is a real co-partnership, if partners mean the members who have supplied the capital to develop the concern and who share in the losses as well as in the profits. Working men, however, have not usually any capital, and any suggestion for co-partnership on this basis must have features which are attractive and make it possible for them to invest their money. The scheme that is outlined here has been tried with success and obviates many of the difficulties mentioned above.

A business which is a limited liability company can, without much difficulty, offer real co-partnership to its employees. It may be assumed that a company which is paying small dividends, or none at all, could not possibly have any profit-sharing scheme or make any offer of co-partnership to its employees that would be of any value. These sugestions, therefore, only apply to companies which have been paying reasonable dividends and whose Ordinary Shares stand at a premium.

It would be necessary to alter the articles of association and increase the registered capital of the company in order to create a new class of shares, which may be called the "Employees'" Ordinary Shares. As an example, assume that the £1 Ordinary Shares of the company are worth £1 5s. each. The new articles should authorize the issues, *at par*, of Employees' Shares to workers in the business. The term "Employee" might include any person employed by the company, and paid by wages, salary, or commission. Probably the directors should be excluded, as they would have to allot the shares, and the scheme would be primarily for the benefit of the lower-paid employees who would not, in ordinary circumstances, purchase shares. The inducement for the employees to buy these shares is that the price is considerably less than the market value of the Ordinary Shares, and therefore, the yield on their investment is high. If there were no restrictions on the sale of the shares, the holders might be tempted to sell and take their profit,

and the shares might then pass away from the actual workers in the business, or be bought up by a few wealthy members of the staff.

The whole idea of such a scheme is for these shares to be held by the employees, and as they are issued below their value, the following restrictions could be placed upon their transfer. A holder of employees' shares when he leaves the service of the company must—or he may at any time when still employed, if he wishes to—sell his shares in the following manner. He should notify the directors, who within one month must find another employee who is willing to purchase the shares *at par*, the price the holder originally paid for them. If the directors should be unable to find an employee willing to buy, the holder is allowed to sell the shares to any one he likes and at any price. If the holder sells to some one outside the business, the purchaser must, when he wishes to sell, notify the directors, and sell the shares *at par* to any employee they nominate. Owing to these restrictions, employees' shares are very unlikely to be sold outside, and even if some should be, they will ultimately return to the employees if reasonable dividends are maintained. The only exception to this rule is that the shareholder, if over 50 years of age when he leaves the service of the company, may hold his shares untill his death, and leave them to his widow, for her life, if he wishes.

Working Man's Capital.

A possible objection that may be raised against this scheme is that a working man usually has no capital available for purchasing shares, and such an offer would, therefore, only be of interest to the salaried staff. The experiment, however, has been tried of announcing an issue of employees' shares for purchase either for cash or by instalments. Those who pay cash have the rights and receive the dividends of ordinary shareholders. The employees who wish to buy by instalments pay a small sum, such as three pence per share per week, by deduction from their wages, and the collection of these amounts is thus simplified. The purchasers by instalments would not receive an allotment letter until the par value of the shares had been paid in, but only a promise that they should be allotted shares when the payments had been completed. If the employee should wish to withdraw from the scheme before his shares were allotted, the whole of his instalments could be returned to him without interest, if the insurance scheme suggested below had been adopted in lieu of interest. They are not shareholders until the instalments are completed and the shares allotted, but as an inducement to apply for shares and a set-off against the interest on the accumulated instalments, the company—if the employee should die—can promise to make a gift to his heirs of the unpaid instalments. The shares can then be issued to his heirs if employed by the company, or sold for their benefit if they are not. Experience has proved that the liability under this insurance scheme is small, and it is a gratuity to the widow or dependants of an employee who was eligible for co-partnership. The number of shares held by an employee may be small and the payment of dividends by cash instead of by warrant is simpler and preferred by the small shareholder.

There are many working men who would be unable to put down £10 or £20 for buying shares but who would be glad to save a few shillings each week in order to become shareholders in a business where they worked. They would also know that as they were buying their shares considerably below their market value, so long as the company was moderately successful they would be able to obtain their capital again, if a "rainy day" came or if they lost their job.

Advantages of Co-partnership.

Co-partnership of this kind has many advantages. The employees have the shares offered to them on easy and favourable terms which are suited to their income. Thrift is encouraged, and their spirit of independence and self-reliance is not sapped by the receipt of "something for nothing". They have the pride of part ownership of the business in which they work, and they realize that anything that harms the company harms them also. The shareholders do not suffer, as their dividends are not limited or affected, and the additional capital will strengthen the business. The directors can control the amount and issue of employees' shares as they think best. They can allot the original shares and those that change hands later on to any employee they like, and if there be a "waiting" list of purchasers, the shares can be transferred to those who deserve encouragement for their energy and ability. It is probable that the offer of employees' shares on a basis similar to that explained here would not produce a very large response at first, but when the employees obtain an imposing share certificate

and begin to receive dividends they will realize more fully the advantages of this form of co-partnership, and further issues may lead to a much larger number of applications.

Men and women who are paid by weekly wages, even if they have saved some money, do not usually understand the buying and selling of shares. The fluctuations in prices and the methods of brokers are beyond their ken. Any scheme of co-partnership which is to succeed must be simple in method, easy to understand, and adjusted to their needs and finances. This scheme is not new and untried, but has stood the test of many years, and has been greatly appreciated by a great number of employees, whose small savings have accumulated to large sums as a result of issues of employees' shares.

Bombay Hand-Weaving Industry.

The Government of Bombay has before it a proposal for the establishment of a Central Weaving Institute to carry on research in hand-weaving and its preparatory processes. Hand-weaving is an important industry in this Presidency, and there are about 300 places where it is conducted with handlooms, ranging in number from 20 to 5,000 giving subsistence to about 800,000 people. But it is the most primitive type of handloom that is still in common use.

The attempts of the Government of Bombay have of late been concentrated on the introduction of the fly-shuttle looms, which increase the weaver's output by about 40 per cent, and the attempts have been attended with large success. But if the handloom is to continue to compete with the mill industry there must be continuous improvement and experiment therein. An automatic handloom, for example, if it can be economically produced so as to be within the reach of the weaver's pocket, and also suitable for his cramped workshop, would be a boon to him. But, for this, research and experiment are necessary. On this ground, and because of the importance of the industry in the Province, the Director of Industries, Bombay, considers that a weaving institute would be justified, however unsuccessful it might prove.

Besides, improvement in the handloom itself, there is also need for experiment in the preparatory processes of weaving. The ordinary handloom weaver wastes an enormous part of his time in preparing warps on the most primitive methods, and of a most uneconomical shortness. Research is urgently needed on the most practicable and cheapest methods of preparing the yarn for the loom. The Department of Industries has for some time been experimenting on a warping and sizing machine which is proving its success, but is unsuitable to the individual village weaver, the difficulty in the way of its introduction being the need of a trained man to look after it, and the consequent cost of running, together with the fact that it produces more sized warp than is required for a single weaver. Considered from this point also, a weaving institute which will experiment on the most practicable and cheap methods in the preparatory processes is a prime necessity. As a result of the hand-dyeing and calico printing experiments carried on by the Industries Department for two years continuously, two firms in Ahmedabad and one in Surat have taken up the manufacture of calico prints on the improved methods. There is a distinct opening for this work in this Presidency, as a possible outlet for Bombay products can be found in their use by the natives of East Africa. Samples of the hand-printed cloths imported into East Africa from Manchester and Holland have been secured through the Indian Trade Commissioner in East Africa. These are generally 46 in. wide and 66 in. long, and known as *Khangas*. They are supplied in various styles. Attempts are being made to interest Indian firms and Bombay mills which do machine printing in this trade.

The scholars who had been awarded scholarships by the Government for the study of the gold and silver thread industry in Europe have returned and are now engaged in introducing various improved devices into the gold and silver thread factory at Surat. The industry is one of the most backward in its methods, and offers good prospects of being improved by the application of even a little scientific and mechanical knowledge. One scholar maintained by the Government is at present learning dyeing and bleaching at the Manchester School of Technology, and another is engaged on investigations at the Indian Institute of Science, Bangalore, into certain reactions in connection with the manufacture of dyestuffs which promise to be of considerable technical importance. Another scholarship for study abroad is open for textile spinning.

A proposal has been put forward for the manufacture of artificial silk in Bombay.

International Chamber of Commerce.

In view of the undoubtedly important role which the International Chamber of Commerce has come to play in the economic life of present-day Europe, and quite particularly with reference to the support it has given to the League of Nations in connection with the recent conference on customs formalities at Geneva, a short survey of the organization, development and work of this great commercial body may be of interest.

The International Chamber of Commerce originated at the International Commercial Conference at Atlantic City, U.S.A., in October, 1919, which was attended by prominent business men from Belgium, the United States, France, Great Britain and Italy. The International congresses of Chambers of Commerce, which had taken place at Liege in 1904, at Milan in 1906, at Prague in 1908, at Boston in 1912 and at Paris in 1914, had furnished merchants and industrialists with an occasion of meeting and exchanging views on subjects of international interest. After the war it was recognized that the organization of a permanent international commercial body was an absolute necessity, and that it should extend to bankers, industrialists and merchants alike. The International Chamber is now a representative organ of all such circles in 33 countries, the following table showing the progress made in a period of two years as regards membership:

	Active Members	Associate Members	Total
July, 1921 ..	350	378	728
July, 1922 ..	408	627	1,035
August, 1923 ..	469	869	1,338

The active and associate members are grouped in national committees. The former comprise such co-operative, financial, industrial and commercial institutions and associations, both national and local, as are truly representative in character and pursue neither political nor charitable designs, the latter being individuals, firms and societies exercising financial, industrial and commercial pursuits in those countries in which co-operative institutions may be elected active members. At the same time, any economic or educational institution belonging to a nation represented in the Chamber may, on the recommendation of the national committee for the respective country, be furnished with the publications of the Chamber at the same rates of payment rendered by an associate member.

The national committees form a bond between the members within the respective countries and entertain constant relations with the general secretariat. Their chief task, however, is to bring to the notice of the individual Governments, the resolutions passed by the International Chamber and to inform the latter of the progress made and of the general economic conditions in their districts. The members of the national committees can delegate certain of their number to represent them at the international meetings, *i.e.*, at the congresses, council sessions, and on the investigatory committees. Certain questions may be submitted to a referendum, so that the opinion of the active members may be ascertained, this being effected by way of correspondence.

The investigatory committees are composed of representatives and expert advisers nominated by the national committees and assemble at the general secretariat to examine questions entrusted to them. By receiving their instructions from one congress and reporting to the next, they form a link between the separate conferences. Their reports are discussed and in some cases submitted to a referendum. They do much to render possible a liberal exchange of view among business men and to eliminate rivalry and misunderstandings among the nations.

The Chamber is administered by a council nominated by the various affiliated countries, which delegate thereto a number of members corresponding to their economic importance. For the purpose of dealing with questions which call for rapid decision and immediate execution, the council may entrust to an executive committee composed of a maximum of 15 members such of its powers as it deems fit.

The general secretariat carries out the decisions of the council and of the executive committee, and prepares and organizes the conferences, the referenda and the tasks to be entrusted to the investigatory committees.

The administrative commission, presided over by the general secretary, is principally intended to serve as a conciliatory body in all cases of friction submitted to the Chamber.

A congress must take place at least once in the course of two years. All delegates of active or associate members can take part, and Government delegates may be invited. Any delegates present may speak,

but only those representing the active members have the right to vote.

The constitutory congress, held in Paris in June 1920, adopted the statutes of the Chamber and a number of resolutions concerning prominent financial and economic questions of the moment. The first actual congress of the Chamber, held in London one year later, passed 27 resolutions reflecting the opinions of leading financiers, merchants and industrialists of the 15 countries then affiliated to the Chamber, the most important of these decisions being those which purported the creation of an international financial committee, the standardization of bills of lading and measures in the interest of international arbitration. After one year's research, regulations on the subject of arbitration were published, being confirmed by the council of the Chamber in July, 1922, and put into operation shortly after.

The second congress took place at Rome from March 18th—24th, 1923, 540 persons, representing 36 countries, being present. This congress adopted a number of resolutions on subjects of finance, such as the work of restoration and affidavits in respect to the cashing of certain deeds and coupons; of industry and commerce, *e.g.*, an equitable treatment of trade in connection with customs formalities, international commercial arbitration, the protection of industrial property, and statistics of production; and of transport, *viz.*, aviation immigration, general average, commercial terms, passports, railway traffic, and the transport of containers filled with compressed, liquified or dissolved gas.

The Court of Arbitration consists of about 100 of the most eminent men of the financial, commercial and industrial world in the various affiliated countries. It places its good officers and the service of its organization at the disposal of business men residing in different countries for the settlement of their differences. The executive committee of the Court is composed of one member from each affiliated country. The Court is not a body called upon to issue a verdict but an authority for the nomination of arbiters and for the control of the process of litigation. The regulations of the International Chamber in this respect are completely adapted to the diversity of legislation and jurisprudence in the various countries. It is entrusted by the mediation of the national committees with the interests of the litigants, an obligation which embodies guarantees such as can be offered by no other authority. In countries where no national committee exists, the parties in question approach the Chamber by the mediation of such economic organizations of their country as already belonging to the International Chamber, or, in default of such, through their respective Chambers of Commerce.

The membership fees due by each active member amount to 300 frs. for the first delegate and 500 frs. for each supplementary one per annum. Associate members pay an annual fee of 300 frs. Both active and associate members, moreover, pay their national committee a fee to cover working expenses.

The secretariat keeps in touch with the members by means of the publications, which are of three different kinds, *viz.*, circulars, dealing with subjects of daily interest in an objective and concise form; the bulletin, which gives an account of the activities of the International Chamber and its national committees; and booklets treating of the studies and investigations conducted by the Chamber on matters of special interest.

Wanted More Reforms.

In the course of an article on the work before our legislators and public men, in the *Indian Review* (edited by Mr. G. A. Natesan), Sir M. Visvesvaraya, K.C.I.E., retired Dewan of Mysore, says the reforms have come in at a time of world unrest and since they are halting and inadequate, they have only made people eager for what is still withheld from them. The political situation would be instantly eased, the credit of administration would rise at a stroke if the British Government granted a substantial part of the remaining concessions demanded and granted them not grudgingly but of pure grace and imperial munificence. Till this is done the political issues will continue to dominate the situation and activities in economic and social spheres will remain paralysed. He also adds that British capital and British experts will continue to be welcomed once we begin to see a real change of heart on the part of the British Government and a real inclination to treat India and Indian interests from the view point of a Dominion instead of a dependency.

India and British Empire Exhibition.

London.—The Indian pavilion at Wembley is now structurally complete, apart from the decorative work in active progress, and a beginning has been made in the preparation of the various sections for the opening day. Many commercial and other exhibits are already being received at Wembley from the docks and warehouses. Each participating province has an officer in charge of its section, and most of these gentlemen arrived here at the end of last year. They are working in co-operation with the Indian Exhibition Commissioner, Dewan Bahadur T. Vijayaraghavacharya, who recently returned to this country after some months of organization in India.

In the case of every provincial court the accommodation has been insufficient to accept all the applications made. The shipping agency which has been responsible for the reception and warehousing of exhibits from India calculates that they represent a total weight 14 or 15 times greater than has been received from India for any previous exhibition in this country.

The fact is that space is at a premium and that to meet pressing applications a considerable extension of the 100,000 sq. ft. of flooring in the pavilion would be required. One eager business man offered to pay the cost of a considerable extension in order to be able to exhibit. A prominent Indian merchant in Egypt was greatly disappointed to find that there was no space available for the exhibit he had in mind, and urged the right to show Indian wares in the Indian court since there is no Egyptian section.

Cotton Improvement.

In all there will be 27 sections, each in charge of a separate officer. Many of them will be of great commercial interest. Notably there is a section promoted by the Central Cotton Committee, which will epitomize the steady improvements in recent years in the production of raw cotton, and more particularly in the growth of longer staples. The importance of this development to Lancashire in these days of high prices is indicated by the remarkable advance of late in the exports of Indian cotton to this country. The shipments rose from some 6,400 tons in 1921-22 to over 34,000 tons in the last trade year. In the year drawing to a close, there will be a larger total, judging from the fact that in the nine months ended on December 31, the last shipments were more than 11,000 tons in excess of the corresponding period of 1922.

The other great Indian textile, jute, will be illustrated not in a separate section, but in the Bengal Court, for the Bengal Government justly claim that the growth and manufacture of jute is so distinctive a feature of that part of India that it could not well be separated from the other exhibits relating to Bengal. On similar grounds coffee is to be shown in the Madras section. Tea, on the other hand, will have its distinct show under the auspices of the Indian Tea Association.

Timbers and Minerals.

A notable commercial as well as artistic feature will be the timber section organized by the Forest Department. The wonderful range of Indian woods will be shown not only by sections of timbers, but also by specimens of their decorative and constructional uses. The exhibit will include a complete drawing-room, furnished and decorated with Indian timbers. There will be opportunities for further study of the possibilities of this trade in the separate Burma pavilion.

The mineral wealth of India will be graphically indicated in the section for which the Geological Survey is responsible. The Indian railways and their developments in recent years in the construction of rolling stock will also be brought to the notice of visitors. The remarkable work of the Survey of India in mapping that vast country and the mighty ramparts of the Himalayas will be set forth.

The trade in genuine Indian decorative, domestic, and applied arts in this country is capable of considerable extension, and should be much stimulated by what Wembley will have to show through the Summer season. It is notorious that no infrequently spurious imitations take the place of the genuine article; and also that to meet the craze of curiosity hunters, Indian artistic workers are tempted to fall below the traditional standards. To ensure attachment to these standards the Government of the Maharaja of Cashmere is undertaking direct responsibility for the selection of all exhibits of the varied art wares of the State. Similarly the Mysore Government is sending a fine selection of sandalwood and ivory. But probably the best ivory exhibit will be from Travancore, where the Maharaja is taking a close personal

interest in the representation of the State. Another important Indian principality, Jaipur, is showing a collection of the brass wares for which it is famous.

One result of the Exhibition should be to bring to the knowledge of the British public the fact that it is not necessary to go back to the Mogul school for good examples of Indian painting. There is a living vigorous school of modern painters in India, and their work will be shown in a gallery of some 1,600 sq. ft. The selections have been made by a committee in Bombay representing from all over India the modern Indian school. In the general fine art sections will be found choice specimens of Mogul painting.

The Exhibition may do something to develop the taste in this country for Indian curries. There will be a restaurant at the Indian section, under the control of the sole concessionaires for catering (Messrs. Lyons), where Indian dishes prepared by Indian cooks will be served side by side with English dishes.

The War Against Rot.

It is probably true, says Mr. A. S. Dawson, Chief Engineer, Department of Natural Resources, C. P. R., Calgary, in the *Illustrated Canadian Forest and Outdoors*, that more lumber is annually destroyed in the forests of the country by decay than by fire; and decay—though not as spectacular—should be considered a forest enemy ranking side-by-side with fire.

Moreover, in order to conserve the forests it is just as important to arrest the ravages of wood-decaying fungi as it is to endeavour to prevent the forest fires.

Every foot of commercial lumber probably necessitates the cutting of three or four feet in the forest.

The Railway ties in service on Canadian Railways probably number 120,000,000 or 3,840 million feet board measure. The annual replacements—without considering those used for extensions—probably average 12,000,000 or 884 million feet board measure.

Preservative treatment has been developed to a degree of effectiveness in various countries which makes it possible to double or even treble the life of any species of wood commonly used for railway ties.

It is, therefore, apparent that if even the ties used for replacements were given one of the many well-established processes of preservative treatment, the saving on the annual cut on our forests would be very large—and the same remarks apply with equal force to the still larger quantities of construction lumber annually used.

Fire protection, reforestation, sylviculture, scientific lumbering, and elimination of waste are without doubt all important and necessary for the conservation of this great Natural Resource; but the waste through decay is equally important, and can only be offset by some form of preservative treatment.

The latter may be utilized to convert fast-growing, non-durable species into superior durable timber suitable for structural purposes—it makes possible the use of timber otherwise regarded as little more than worthless—it enables trees removed in thinning the forest to be put to higher uses—and makes it possible for inferior logs to be used to better advantage than if left to rot in the woods, or be sawn into inferior grades. It accelerates the removal of fire-killed and dead timber, which is a prey to forest fires—and enables areas so denuded to be more rapidly reforested and placed on a profitable basis.

In addition to the direct effects on the forests—wood preservation is a direct financial economy to all large users of timber—and is a requisite to the proper utilization of the available supply of structural wood. It doubles and even trebles the life of certain species of timber not otherwise suitable for certain service—and releases an equivalent quantity of valuable softwoods for other commercial purposes.

Every foot of timber made to give longer service by preservative treatment means a lessened drain on the forests; and as has been truly said, "A forest saved is a forest grown."

The preservative treatment of lumber, therefore, not only helps to conserve a timber-user's resources, but the Nation's timber supply as well.

I believe the day will come when large treating plants will be established in Western Canada—that it will be common practice to treat most of the timber used, and that this will result in large quantities of certain woods being used for ties and other constructional purposes, for which up to the present it has not been considered suitable.

Industries in Madras, 1922-1923.

The Report of the Madras Department of Industries for 1922—23 is a record of much useful work done. The outstanding event of the year was the passing into law of the Madras State Aid to Industries Act (V of 1923) which empowers Government to assist in the establishment and development of industries in this Presidency in various ways such as the grant of loans, the guarantee of cash credits, overdrafts or fixed advances with banks, subscription for shares and debentures and grants on favourable terms of land, raw material, firewood or water. The Act provides for the constitution of a Board of Industries to assist Government in dealing with applications for the grant of State aid. Two members of the Board have to be elected by the Madras Legislative Council but, owing to the prerogation of the Council which passed the Act and its subsequent dissolution, it had no opportunity of electing its representatives and the Board could not be constituted. This difficulty has been removed now that the new Council has met and the Government have every hope that the Board will very soon begin to play an important part in the rapid development of industries in this Presidency on sound lines. Numerous applications for State aid have already been received and await disposal by the Board. The old Board of Industries which had rendered most valuable help to the Director ceased to exist in November 1922 and the Government take this opportunity of acknowledging the services rendered by the gentlemen who constituted it.

The large number of enquiries which were received from the public during the year in regard to the sources of supply and markets for various articles and commodities furnishes satisfactory evidence of the increasing usefulness of the department though it is not possible to estimate the exact effect of its activities in this direction. Its efforts to resuscitate the Masulipatam Cotton Printing industry and to find markets for the Kistna Crochet lace industry deserve mention. The former has lost its important Persian markets partly owing to a change of fashion in Persia, partly to the import of cheap imitation goods from foreign countries and partly owing to the increased price of Masulipatam palampores whilst the latter which, in normal times, finds employment for a considerable number of people has been faced with a marked depression in trade all the world over. It is a matter for regret that the result of the boring operations for coal in the Beddadanole area have not so far proved encouraging.

The report gives a summary of the results of the experiments and inquiries undertaken by the department during the year which have as their ultimate object the starting either by private enterprise or by the Government of new industries or of new branches or of improved processes in existing industries. It has been recently stated that Sir Frederick Nicholson proposes to undertake the manufacture of toys on his own account. It could not be undertaken by more competent agency and, in these circumstances, no further action by the Department of Industries in regard to the development of this industry is called for. On receipt of the report on the indigenous bangle industry mentioned by the Director in paragraph 33 of the Report, several members of the Legislative Council with special knowledge of the industry were consulted by the Government regarding the possibility of resuscitating and developing it. Their replies show that it is very doubtful whether any measure of Government assistance would have this result. The question of engaging a consulting specialist to conduct a survey into the possibility of the match industry in this Presidency is still under consideration.

During the year Dr. Marsden completed his investigations regarding the utilization of limes and tamarind as sources of citric and tartaric acids and the possible exploitation of the alkaline deposits of the Kistna and Godavari districts and manufacturing sodium carbonate therefrom. The results of these investigations, which have been published as departmental bulletins, unfortunately hold out no promise of the evolution of a sound commercial proposition under either head. Dr. Marsden's inquiries into the processes of coir production have established that retting under suitable conditions is the only practicable process as softening the husk by chemical means results in a very dark coloured fibre which is greatly inferior to that obtained in the natural way. The experiments in the manufacture of malted foods from cholam have given promising

results but further experiments will be undertaken at the Agricultural College, Coimbatore, before the question of embarking on the erection of a small factory is further considered.

Section III of the Report deals with the management of the manufacturing institutions owned by Government. Various circumstances which are detailed by the Director militated against the presentation of a satisfactory balance sheet by any of these institutions with the exception of the Pallapalayam Sugar Factory. The Kerala Soap Institute was hard hit not only by the prevalent trade depression but also by the competition of cheap imitations of its products at prices with which it could not compete consistently with the maintenance of the high standard of quality which has hitherto distinguished it. The increased output consequent on the removal of the factory to its new buildings and the recovery of the valuable by-product glycerine which this renders possible should, however, enable it to reduce its manufacturing costs whilst the recent reorganization of its selling agencies should improve its sales.

The minor industries laboratory which is now known as the Government Industrial Institute, Washermenpet, was transferred from Coonoor to Madras in October 1922. The primary concern of this Institute is the manufacture of ink and the loss of Rs. 826 on the year's working is mainly attributable to the dislocation of work caused by the transfer. The work of the Institute has demonstrated conclusively that ink of excellent quality can be manufactured in this Presidency, but it has yet to be shown that its manufacture is a sound commercial proposition. The Government have therefore directed that the ink factory should be carried on until the end of 1924—25 by which time sufficient data should be available to enable them to come to a decision whether the process can be taken up by private enterprise or whether the work should be closed down.

The experimental manufacture of vinegar was not continued partly owing to the lack of suitable accommodation and partly owing to the discovery by Dr. Fowler of the Indian Institute of Science, Bangalore, of a new process for the production of white vinegar of high quality. The Government have directed that the exploitation of this process should be left to Dr. Fowler.

There was a regrettable loss of Rs. 18,248 on the working of the Fruit Preserving Institute from the commencement of its operations until the close of the year under review, much of which was due to the difficulty inherent in the starting of an entirely new enterprise. Since the close of the year special attention has been paid to the development of the selling side of the Institute and to this end a Business Manager has been appointed. The operations of the Institute have already stimulated the cultivation of fruits in the Nilgiris, which was one of the objects the Madras Government had in view when sanctioning its establishment. With glue as with ink, the work of the Department has established that a product of excellent quality can be manufactured but that the difficulty in disposing of it in sufficient quantity at a remunerative price is at present almost insuperable. The glue factory has been temporarily closed down and the Madras Government have called upon the Director to report before the end of the current financial year whether this closure should not be permanent.

The Director is able to render a very satisfactory account of the efforts of his department to assist the handloom weaving industry. The Textile Institute made an excellent start in spite of the handicap resulting from the cramped accommodation in the rented buildings which were all that were available and bids fair to justify its removal to a permanent building of its own. The Director mentions that owing to financial stringency, it was not possible to develop sericultural operations to any appreciable extent during the year under review; since its close, however, proposals for the complete reorganization of this branch of the department's work have been sanctioned. The small sericultural farm at Coonoor will be developed into a central distribution station and into a sericultural research institute for the Presidency under the direct supervision of the Sericultural Assistant; a rearing party will be stationed at Kollegal which will tour in the villages in that taluk in order to instruct the weavers in the microscopic testing of moths, the handling of worms, the growing of bush mulberry and pruning and picking of leaves. It will also distribute to the weavers disease-free seeds obtained from Coonoor and will conduct experiments in improved methods of rearing silk. For the development of the industry in other parts of the Presidency, a Silk Superintendent will be deputed to those

localities considered suitable for the purpose in order to assist private persons in the selection of the land for mulberry plantations and in the cultivation of the land. He will also rear one or two crops with the help of the maistris who will be specially trained for this purpose.

The facts and figures in Part V of the Directors' Report show the extent to which the work of the Industries Department is of benefit to agriculturists in this Presidency. They also show the extent to which its usefulness to agriculturists is hampered by the prevailing financial stringency. The demand for power drills, for example, was so great that it was found impossible with the existing number of drills maintained by the Department to comply with even five per cent of them. The Government trust that it will be possible shortly to provide funds which will enable this unsatisfactory state of affairs to be rectified to some extent. The Government are glad to observe that in spite of its transfer to new buildings there was a profit of Rs. 2,342 on the working of the Industrial Workshop.

In April 1922, the Government appointed a strong committee, of which Mr. Couchman was President, to inquire into the present equipment of the Presidency in respect of Technical and Industrial education and to submit a comprehensive scheme for an organized system to meet the needs of the present and the reasonably near future. This committee submitted its report in February last and its important recommendations are now under the consideration of the Madras Government.

They are glad to note the growing popularity of the Madras Trades School as evinced by the large increase in the number of students on its rolls. They have little doubt that the transfer of the school to the new buildings, which will be ready for its occupation by the middle of 1924, will still further increase its usefulness.

In January 1923, the Madras Government appointed a committee to see how best the Leather Trades Institute could be made to serve the interests of the further development of the leather industry in the Presidency. The report of the committee has just reached that Government. Meanwhile the extensions to the Institute have been sanctioned and the completion of these will mean that it will be equipped with an excellent laboratory for the students in addition to one for the chemists working in the Department. The testimony of a member of a prominent leather firm in England that the Institute is the most interesting and instructive of its kind he has seen in any country ought to be gratifying to the Madras Government.

The Madras Government fully realize the value of the assistance in the industrial development of this Presidency which is rendered by aided industrial schools and they share the regret expressed by the Director in paragraph 134 of his Report that much work cannot be done by way of increased teaching and building grants to enable them to provide increased accommodation and better technical equipment. The Madras Government assume that due recognition will be given to the claims of these schools as soon as an improvement in the financial situation renders this possible.

Another institution, the work of which came under the scrutiny of a committee during the year under review, was the School of Arts. In accordance with the recommendations of that committee the school has been re-named 'The School of Arts and Crafts' in order to emphasize that the main object of the school is to teach the application of art to industries which are capable of artistic treatment.

Standardization in Industry in Norway.

According to the Report on the Industrial and Economic Conditions in Norway by the Commercial Secretary to H.M. Legation at Christiania, a plan has been drawn up by the Norwegian Industrial Union, for the advancement of standardization in industry. It is proposed to establish one central committee, and sub-committees in all branches of industry where standardization is possible, whose duty it would be to investigate all measures calculated to advance industrial standardization, to supervise the administrative procedure on which standardization must be based, and to propagate the adoption of a Norwegian standard. With a view to putting this plan into effect, the Union have applied for the sympathetic support of the Norwegian authorities, and for a State grant of kroner 30,000 per annum for three years. The Ministry of Commerce have recommended that half this sum should be granted.

State Loans for Farmers.

A Few Hints for India.

[*The following statement was issued by the British Ministry of Agriculture and Fisheries in pursuance of the Government's policy recently expounded by Mr. Buxton in the House of Commons.*—Ed., *M.E.J.*]

The Ministry of Agriculture is prepared to consider applications from agricultural co-operative societies for loans to enable them to develop forms of co-operation directed to the preparation and marketing of agricultural produce, such as bacon factories, milk depots, etc. Provision will be made in the Estimates of the Ministry for the year 1924-25 for this purpose.

It will be remembered that the Departmental Committee on the Distribution and Prices of Agricultural Produce, both in its final report and in its various interim reports, strongly urged the need for State assistance to co-operative societies engaged in the sale, preparation or manufacture of farm products by providing advances towards capital expenditure on buildings, land, plant or equipment. The Committee also recommended the appointment by the Minister of Agriculture of a small standing Advisory Committee to consider the merits of applications or advances, the Committee being constituted so as to include in its membership those possessing not only an extensive knowledge of agricultural conditions, but also some experience in finance and commerce. The Minister proposes to adopt both these recommendations, and it is hoped that it will be possible to announce the composition of the Committee at an early date.

The exact terms and conditions on which the advances are to be made will be settled after consultation with the proposed Advisory Committee, but in order to enable societies to consider the matter without delay the following provisional conditions are given as an indication of the lines on which loans will be made :—

1. The Ministry of Agriculture will make loans to Agricultural Co-operative Societies registered under the Industrial and Provident Societies Act to the extent of such funds as may be placed at its disposal. In order that a society may be eligible for a loan the society must have for its object such agricultural purposes as may be approved by the Ministry, and its capital must be subscribed mainly by agriculturists. The share capital paid up by the subscribers must be not less than 5s. per £1 share, and the rate of interest on the paid-up share capital must be limited to 5 per cent.

2. The amount of the loan from the Ministry will not exceed, in the case of a new society, half the total capital considered by the Ministry to be necessary for the proper equipment and working of the society, nor the amount of share capital subscribed by the members of the society, whichever may be less. No loan will be granted until the Ministry is satisfied that the remaining capital required for the proper equipment and working of the society will be available.

3. Loans will only be made to existing societies for the purpose of improvement or extension of premises and plant, and the loan will not, in any case, exceed half the sum estimated to be spent on the improvement or extension of premises and plant.

4. In no case will the Ministry's loan exceed the sum of £10,000 to any one society.

5. In the case of a newly-formed society the loan will be secured by a first debenture upon all the assets (including uncalled capital) of the society. In the case of an existing society it will be secured, if possible, by a first charge on the premises and plant obtained or improved with its assistance. If such a first charge cannot be given, the Ministry will require other satisfactory security.

6. Interest will be charged on the loan at 5 per cent per annum, and the loan will be repayable in instalments spread over a period not exceeding 20 years. Both interest and repayment of principal will be payable half-yearly. The first payment in respect of both interest and principal may, if the Society so desire, be deferred for 30 months after the date when the loan is actually paid over by the Ministry, or, if the loan is made in more than one instalment, 30 months after the date when the first instalment is paid. The first payment to the Ministry will be six months' interest on the whole amount of the loan and a proportion of the principal according to the period of the loan. When the first payment is deferred, as suggested above, the repayment of the interest and of the principal will need to be adjusted so that the

whole loan is repaid within a period not exceeding 20 years from the date when the loan is first made.

7. The Ministry must reserve the right to require at any time immediate repayment of the principal of the loan and all outstanding interest, but there would be no intention to exercise this right so long as the society was managed to the satisfaction of the Ministry. The Ministry will also have the right if it so desires, to appoint, either temporarily or permanently, a representative on the committee of management of any society to which a loan is made.

8. The society shall cause an audit of accounts to be made yearly, and a copy of the auditors' report and of the accounts shall be supplied to the Ministry. The books of the society shall be open to inspection by an officer of the Ministry at any time.

Match-Making in Ceylon.

The Ceylon Safety Match Manufacturing Company seems to be thriving well. Started in 1898 with a capital of Rs. 42,500, the concern within a comparatively short period paid 60 per cent dividends and as appears from last year's report has had carried forward to this year a huge credit balance. The directors intend considerably extending the business so as to stop imports of matches into Ceylon altogether and as time goes on to export matches to India. At one time Japanese and Swedish match manufacturers made an effort to crush the local match-manufacturing concern by cutting down the prices of their products to far below the cost of manufacture. At that time the Ceylon concern was using expensive English match-making machinery, English chemicals and sawn Japanese box-making wood. The directors of the Ceylon company were forced to seek for means of cheapening the cost of production, and they replaced the power-driven machinery with low-priced hand machinery from Japan, imported chemicals at low rates from the principal chemical sources of Germany, began making matchboxes of suitable Ceylon woods, and enlarged the factory to accommodate a larger labour force. These steps enabled the company to compete with the cut price of the imported match and to secure a fair profit.

Foreign Imports.

The following figures gathered from the statistics of the Ceylon Customs—as far as available—will no doubt interest the public :—

Years	Total imports of matches into Ceylon, expressed in cases of 50 gross boxes. Cases	Average value declared per case. Rs.
1912	7,722	36
1913	5,962	41
1914	6,028	46
1915	7,090	50
1916	6,174	66·50
1917	6,367	96
1918	5,786	122
1919	3,697	81
1920	4,755	86
1921	5,549	109
1922 (Jan.-April, 4 months)	5,710	74
1923	475	57

It appears from these figures that the cost of matches steadily rose and reached to top of the market during 1918. The subsequent two years (1919-20) saw a very sharp decline, due chiefly to the exchange boom and to a certain extent also to the general slump of prices all over the world. In 1921 Home prices continued to sag. However, the enormous depreciation in the purchasing power of the rupee, *i.e.*, the return of the exchange rate to 1s. 4d., temporarily landed importers with exceedingly expensive contracts, which caused the local market to react. Finally the local market receded in sympathy with the steady falling away of Home rates. There is no doubt that but for local competition the imported box of matches would be retailed in the island to-day at about 4 cents instead of 1½ cents. Of late the Ceylon Match Manufacturing Company has adjusted its wholesale prices so that its product can be retailed at the pre-war price of 1 cent or about one-seventh of a penny a box. The local product is quite equal in appearance and in firing quality to the best imported matches.

Extensions Planned.

Out of a net profit of Rs. 38,557 made in the course of last year the Ceylon Safety

Match Manufacturing Company has declared the encouraging dividend of 40 per cent and has appointed reasonable sums as directors' fees, agency charges, bonuses to manager of factory and labourers, and as a reserve for the further extension of the factory. The accounts show that the various investments of the company have appreciated the value of the original capital by Rs. 68,000. The extension of the factory in the course of last year has given employment to about five hundred persons in place of the two hundred at work in the preceding year. It is hoped that the output this year will be double that of last year. Large extensions and improvements will be made to the factory with a view to meeting as quickly as possible the entire requirements of Ceylon and also some portion of the extensive demand of India and Burma. It is stated that certain improvements on the Japanese hand match-manufacturing machine introduced locally have greatly increased the output of the original machine. An effort will probably be made in the near future to patent the improved model, which, it is said, could be made in Ceylon entirely.

Chemicals and Power Supply.

The only difficulty now remaining is the supply of chemicals. Perhaps it is not possible to manufacture in England the chemicals required in match manufacture as cheaply as in certain countries of Europe, which have tapped their water-power resources to a very high degree and are favoured in other ways. The Ceylon Match Manufacturing Company would have bought its chemicals in England if it could have got them at as cheap prices as in Germany. The Government of Ceylon has in hand certain modified plans for the development of the Aberdeen-Laxapana hydro-electric scheme. This very probably will be sanctioned in the course of this year. The establishment of chemical industries is an important item kept in view in connection with the development of the local hydro-electric scheme. Eventually the Ceylon Match Manufacturing Company may have locally made chemicals and cheap electric power at its disposal. Match manufacturers of Great Britain should make inquiries at the Ceylon pavilion in the forthcoming Empire Exhibition for Ceylon timbers suitable for the manufacture of matchboxes. Perhaps the Commissioner will also be able to give details of the improved hand match-making machine now in use.

Object of the Concern.

The object of the Ceylon Safety Match Company is threefold. First to make the price of matches cheap in this country. When the company began its operations the price of a case of 50 gross Swedish matches was Rs. 180, and single boxes were sold for as much as three cents each. The price of a single box of Ceylon-made matches is now one cent and a case of 50 gross is sold for Rs. 70. Are the people benefitted by this reduction of price or are they not? According to figures given at the last general meeting by the Managing Director, the quantity of matches imported has not decreased. Therefore the Government has not suffered any loss in the matter of import duty. What is evident is that a large number of people are now using matches, taking advantage of the present cheap price, than they did a few years ago. Secondly to give employment to the poorer classes. About 500 men, women and boys are now employed by this company. That also stands to their credit. The third object is to get some return for the capital invested in the venture. Sometime ago the Ceylon Safety Match Manufacturing Company established, primarily for the benefit of the large number of women and children it employed, a Labourers' Co-operative Credit Society. For this it subscribed from time to time certain sums of money out of profits. It is now stated that some members of the society have to their credit as much as Rs. 50. Plans are being considered for transferring to the labourers a certain proportion of the shares of the company with a view to interesting them directly in its activities, for establishing a Workers' Council which will discuss and decide upon all labour matters, and for building a garden village on the Bournville model.

The Government of Bengal, in the Ministry of Education, have decided to form a permanent Advisory Committee consisting of the Minister-in-charge of Education, the Vice-Chancellors of the Universities of Calcutta and Dacca, Sir Asutosh Mookerjee and thirteen others to assist the Government, and the two universities to work together and to make the most of their resources and opportunities. It will be the duty of the Committee to ensure that there is not any avoidable overlapping in the provision of specialized courses of study, particularly in science.

Nikolai Lenin.

Lenin's origin is a little masked by the writers of the Official Communist biographies issued in Russia, who are naturally anxious to pretend that he was a simple "peasant and workman," "a son of the people," like, for example, Rykov or Kulinin. His father was a civil servant of sufficiently high rank to obtain "hereditary nobility". He was a Government Inspector of Schools in the Volga district and lived at Simbirsk, where Lenin (Vladimir Hyitch Ulianov) was born on April 10, 1870. The older Ulianov must have been a remarkable man, for he, I believe, was indeed of peasant origin, and it was not easy in the old Russia for such a man to attain such a position. It is even more remarkable that the family of the school inspector should have been revolutionaries, for, as a rule, few were more devoted adherents of the old regime than those who had but recently found their way into the superior caste. Lenin was seventeen when his elder brother Alexander was hanged by the Tsar's Government, as a terrorist, a 'narodnik', one of the social revolutionaries with whom throughout his whole political life Lenin himself was to carry on a determined struggle. In that year Lenin left school, and began law studies at the Kazan University. But perhaps, on his brother's account, he was already a marked man, and was almost immediately expelled "for taking part in the students' revolutionary movement", says Mr. Arthur Ransome in the "Manchester Guardian".

A Marxian Revolutionary.

Four years later, however, he was able, as an external student to pass his examinations at St. Petersburg University. He was already entirely absorbed by political and economic theory, and which taking practical part in the preparation of revolution by forming reading circles and clubs among the workmen, was beginning his long career of polemic against those who had other views than his own on the interpretation of Karl Marx. While he was still in the early twenties he had made himself a reputation, pertinacious enemies and devoted disciples in the little underworld of revolutionary theorists. He was easily exposing the uselessness of assassination as a means of revolutionary struggle, and with more difficulty and much greater interest showing that the Russian Revolution, when it should come, would not be directed merely against the autocracy but would bring with it a far more significant struggle between the investing and the wage-earning classes.

Long before the 1905 revolution Lenin founded in St. Petersburg, "The Alliance of Struggle for the Liberation of the Working Class," which, by its very title, was a challenge to other revolutionaries as well as to the autocracy. Other revolutionaries attacked him with words. The autocracy put him in prison and presently sent him to Siberia. Here he acquired a love of sport that lasted until his death. Even during the most difficult times of the Revolution Lenin used at ween-ends to escape from the Kremlin and go off to the country round Moscow with his gun after capercailzie, hares, and partridges, sometimes sucessfully, sometimes not but always with boyish enjoyment throwing off completely the cares of his position. Rykov often accompanied him, and on returning from one of these expeditions told none, who asked him if they had had much sport, that they had seen nothing, not even a hare, but that Lenin had finally, in despair, pulled a copy of 'Izvestia' from his pocket and fixed it upon a tree, and that he and Rykov have then worked off a good deal of suppressed feeling by putting shot into Steklov's leading articles. Steklov's leading articles were, for their dullness, a standing joke at the time.

But in Siberia, Lenin of course used his banishment for other ends than sport alone. He did an enormous amount of reading and acquired some of that astonishing knowledge of foreign languages which enabled him later at internationalist meetings to talk with one delegate after another and with each in his own tongue. In Siberia he wrote his first pamphlet, "The Taek of Russian Social Democrats" and his first book a scientific study of "The Development of Capitalism in Russia". In this book he was seeking to prove that Russia was, from the Marxian point of view, already a capitalist country, so that the theories of Marx as to the inevitable revolutionary process would hold good. This was, of course, polemic against those who said that to Russia at least the diagnosis and reasoning of Marx could not be applied. He was also engaged on the philosophic studies, the results of which are probably better known in Masaryk's criticism of them than in Lenin's book.

Beginnings of the Bolshevik Programme.

The next stage of Lenin's active political life was marked by the publication of the revolutionary newspaper "Iskra" ("The Spark"), where he wrote an article that afterwards became a book under the title of "What to Begin With". In this he set out something very like the eventual Bolshevik programme, and opened the split that afterwards widened to a gulf in the body of the Russian Social Democratic party. To get anything like a picture of his life at that time one must imagine the setting of it—a group of friends exclusively revolutionary, talking ceaselessly, arguing over a revolution that had not yet begun and passionate in their, so far, purely theoretical argument to a degree almost incredible in our milder political climate. We must imagine that group of passionately critical readers of newspapers, seeking everywhere for facts, for signs that would buttress their theories, satisfying their craving for action by smuggling revolvers, by dodging the police, by illicit printing of inflammatory pamphlets, watching the course of events, political and economical, with a closeness at least as great as that with which events are followed by a Government in power. They were in a sense a Government, the Government of an embryonic revolution, and during those years they got all the practice they needed in Cabinet crises, reconciliations, compromises, flights into the wilderness, and so on, a fact which goes far to explain the absence of such things when, from being captains of castles in Spain, they obtained control of an actual country. During all this time Lenin's personality and intellect were enforcing the respect of the larger minded even of his most decided opponents. Piokhanov, for example, at a meeting where his own supporters were doing their best to bring about a personal quarrel between him and Lenin, who was attacking his theories, put his hand on Lenin's shoulder, who was standing beside him, and angrily rebuked his disciples, "You will never make me quarrel with him, for he is a man, and you are a lot of old women."

The 1905 Revolution.

The revolution of 1905 consolidated Lenin's position and confirmed him in his beliefs. It was in the strikes of those days, and still more in the activities of the then first created Soviet of Workmen's Delegates absolute proof that Russia was, as he had predicted, moving toward a struggle of classes of greater significance from a Marxian point of view, than the mere struggle between Parliamentarism and Autocracy. In the aimed revolt of the Moscow workmen he saw more promise than in the swiftly waning triumph of the establishment of the first Duma. Later, when Actootary regained confidence and proceeded systematically to withdraw the confusion it had made and to suppress the Labour Government from February, 1906, until the revolution of 1917, no Trade Unions Congress was able to meet in Russia. Lenin remained for as long as he could in St. Petersburg, insisting as one pamphlet after another abate the Moscow revolt and the brief existence of the St. Petersburg Soviet were definite signs that sooner or later the Revolution would recover strength. In 1907 he emigrated to Geneva, and afterwards to Paris, where in great poverty and surrounded by people who insisted that the Russian Labour movement was dead, he in illegal papers, "The Proletarian" and "The Social Democrat," proclaimed its inevitable resurrection.

Five years later, in 1912, strikes and a conflict with the military at Lensk, when a number of workers were shot, seemed to him to show that a new revolutionary wave was close at hand. He moved from Paris to Galicia, to be nearer the Russian frontier and in closer touch with Petrograd and Moscow, where he was writing for papers of the Extreme Left and corresponding with some of the Labour members in the Duma.

Two years later came the European war. Lenin had long been expecting it. Persuaded as he was that the present economic system of Europe was nearing its end, he had declared that the contradiction of interests within that system would lead to a war which should still further weaken it and prepare its final collapse. His one care was that when the crisis should come the revolutionary parties in all countries alike should look upon it exclusively from the point of view. At a conference in Stuttgart in 1912, he had insisted that the Socialists in each country should oppose the war, not because they might be able to stop it, but in order to publish its causes and so bring nearer that revolt of the masses against it which would be the beginning of revolution. This is the essential difference between pure pacifism and the pacifism of the Revolutionary Socialists. Lenin did not cry "Down with war," but "Down with this war, and begin the war which shall put an end to the system that made this war inevitable."

Economics in the West.

Monetary and Financial Reforms in Germany.

London, 30th April 1924.—However depressing may appear at times the condition of affairs on the continent of Europe and the slowness of the recovery from the ravages of war, an element of hope is to be found in the widespread efforts being made, not without success, to restore or replace ruined currency systems. The co-operative experiment in Austrian reconstruction is shortly to be followed by the application of a similar scheme to Hungary, while both in Germany and Poland strong efforts are being made to institute from inside, with external assistance, financial reforms which it is hoped will supply one of the essentials of economic recovery, a stable monetary system. The pending issue of the reports of the Exert Committees set up by the Reparation Commission invests the German experiment with peculiar interest, and so momentous will be the outcome of the reception accorded to these reports that an understanding of recent developments in German currency and finance is a necessity to all who, by reason of business connections or academic interest, are concerned in the intelligent observation of the events of the next few critical months.

Foundation of the Rentenbank.

The history of Germany's efforts at monetary reform may well begin with the establishment of the Rentenbank by the Decree of October 15, 1923. The principle underlying the erection of this institution consisted in the recognition that budgetary equilibrium could not be obtained without the assistance of a stable currency medium to operate over a transition period during which the necessary reforms could be carried into effect. By this time the paper mark had practically ceased to perform its functions as a medium of exchange and a measure of value in internal as well as in external trade. It was clear moreover that the reason why all previous efforts to arrest depreciation had failed lay in the close connection between the Reichsbank and the Government, which gave the latter control over the printing press. Three objects had therefore to be kept in view in working out the scheme for the reorganization of the currency system. First, the Reichsbank had to be freed from the existing Government debt and from any further accumulations of Treasury Bill indebtedness. Secondly, it was necessary to provide the Government with the means to carry on the administration over the transition period which must intervene before the budget could be balanced. And lastly, it was realized a stable currency must be provided to perform the essential monetary functions which the paper mark was no longer in a position to fulfil. From the outset the Rentenbank was looked upon merely as a temporary expedient, to be abandoned when some more permanent structure could be erected in its place.

The new currency unit which the Rentenbank was set up specifically to inaugurate as a stable payment medium is known as the rentenmark, and is made nominally equal to the pre-war gold mark. The Bank's capital consists of 2,400 million gold marks and its reserve of 800 million gold marks, these amounts being furnished by mortgages on the whole of German landed property, commerce and manufacture. Based upon these mortgages, on which interest is payable at 6 per cent per annum, the Rentenbank issues 5 per cent gold value rentenbriefe, or bonds, which form the backing for the new currency. The Bank may issue rentenmark notes up to the amount of the bonds it holds, the notes being redeemable cent per cent in bonds. The notes are not legal tender, though they must be accepted in payment at all public offices.

The New Currency.

The issue of Rentenbank notes was begun on November 15, 1923, and has proceeded along three distinct lines, in fulfilment of the purposes already indicated. An advance of 1,200 millions was made to the Government, 1,000 millions, carrying interest at 6 per cent, to meet Government expenses, and 200 millions, free of interest, to discharge Treasury indebtedness to the central bank. Thus the rentenmark flowed into circulation not only by direct payment by the Government for purchases of goods and in respect of wages and salaries, but also by the handing over of rentenmarks to the Reichsbank by the Government in liquidation of its Treasury Bill indebtedness.

In addition 1,200 million rentenmarks were intended to be available for private credit purposes. These, however, are not issued by

the Rentenbank direct to the public but to the Reichsbank and other note-issuing banks, through the medium of which they flow into circulation. Over and above the total of 2,100 million rentenmarks already arranged for, which have not yet been exhausted, there still remains for use therefore a balance of 800 million rentenmarks, beyond which the Rentenbank may in no circumstances issue additional currency.

It is now necessary to examine the progress of the Rentenbank and the effects of its operations upon the condition of the Reichsbank. While the latter still publishes weekly returns, the former issues its statements at the end of each month. In the table below are set out some of the principal items in the two returns on certain specified dates since the foundation of the Rentenbank :—

(In millions of rentenmarks)

	RENTENBANK					REICHSBANK					
	Loans to Note-issuing Banks (incl. Reichsbank)	Rentenbriefe in Circulation	Notes in Circulation			Notes in Circulation	Private Deposits	Loan from Rentenbank	Discounted Treasury Bills	Discounts and Advances	
										Rentenmark	Papermark
1923											
Nov. 15	--	--	--			92·8	57·1	--	189·8	--	40·0
,, 30	--	--	767·9			400·3	253·5	--	96·9	--	354·8
Dec. 31	34·0	--	1,242·0			496·5	244·9	--	--	142·2	448·8
1924											
Jan. 31	262·0	0·1	1,374·1			83·7	281·3	200·0	--	565·3	527·1
Feb. 29	465·0	0·2	1,579·4			487·9	283·0	400·0	--	852·3	619·9
Mar. 22	--	--	--			606·5	373·0	500·0	--	1,105·8	624·2

The first point to note is the disappearance of discounted Treasury Bills from among the Reichsbank's assets, in accordance with the plan for their redemption. This item reached its highest point, 190 trillions of marks, on November 15 but all the Bills were redeemed by December 22, when the Reichsbank holding of rentenmark notes amounted to 195 millions. The rentenmark is taken as equivalent to one billion paper marks, and on this basis the first item in the programme was thus successfully carried out with the aid of a rentenmark credit amounting to only two-thirds of the amount originally contemplated.

The Reichsbank, no longer under the necessity of meeting the financial requirements of the Government, was enabled to extend more liberal credit to industry and trade, and in consequence paper mark discounts and advances increased sixteen-fold between November 15 and March 22, while in addition rentenmark credits were introduced to the extent of 1,105 millions. Clearly, therefore, the Reichsbank has undergone an almost complete conversion from an annexe of the Treasury to a reservoir of credit for the economic life of the country. Next it will be seen that the Rentenbank has by no means confined its operations to financing the Government. It has made increasing advances to the note-issuing banks to enable them to grant more liberal credits to the business public. The great bulk of these loans so far has been made to the Reichsbank, a fact which probably makes for a more efficient distribution of the available credit over the whole field of German business.

The small amount of rentenbriefe, or bonds, in circulation is an indication of the confidence of the public in the Rentenbank currency. The redemptions have indeed been almost infinitesimal. The total of the Rentenbank notes has increased steadily and only a comparatively small amount is held by the Reichsbank as cover for its own notes, the figure on March 22 being 84 million rentenmarks. But the most interesting feature of the figures supplied in the table is the steady growth in the note issue of the Reichsbank. So far from replacing this medium, the Rentenbank note is circulated alongside of a growing supply of Reichsbank notes.

Transformation of the Monetary Situation.

What then have been the changes brought about in the monetary position since November 15? At that time there were circulating, besides Reichsbank notes and notes of private banks, paper and stable value emergency currencies of various kinds. The former, issued largely against Reich Treasury Bills, are gradually being called in, the process having been inaugurated at the beginning of the year. The stable value emergency currencies, which were introduced as a transition medium a few weeks before the Rentenbank was founded, were issued with the sanction of the Ministry of Finance by provinces, towns, chambers of commerce, large industrial concerns and the railways, and were based on small denominations of

the Reich gold loan and on gold value Treasury Notes. This type of currency is also being called in and its complete disappearance was anticipated by April 1st. In addition the "Hamburger Bank von 1923 A.G." and the "Schleswig-Holsteinische Goldgirobank A.G." in Kiel have issued gold notes, which also are to be withdrawn as soon as practicable. Finally, the Loan Banks, which were established in 1914 and whose figures have recently become negligible, are to cease operations on May 1st. Assuming these redemption processes to be completed before any new currency is introduced, the monetary circulation of the country will consist of Reichsbank, Rentenbank and private bank notes.

It is estimated by Dr. Helfferich that on November 15 the gold value of Reichsbank notes, together with the larger part of the emergency currencies, was 460 million gold marks, and that by February 15 the total currency in circulation had reached 2,354 million gold marks. The figure is now probably nearer 3,000 millions. The recent increase in currency has been accompanied by a comparatively small rise in prices, making it abundantly clear that the present measure of stabilization in purchasing power has been effected by a remarkable reduction in the velocity of circulation. It is a triumph of propaganda that confidence in the new unit was engendered with such astonishing rapidity and that it has been maintained so steadily.

Even now, however, the speed with which the currency circulates must be far in excess of what is normal in highly industrialized countries, inasmuch as the per capita circulation is still relatively low. Before the war the total currency in circulation in Germany was 6,000 million gold marks. After allowing for increased prices and changes in other relevant factors, the circulation at the present time would have been nearly double the pre-war figure had the depreciation not taken place. True, the index number of gold prices in Germany, according to the Reichsboard, now stands at about 120 per cent of the 1913 average, but the "Frankfurter Zeitung" gives a figure of nearly 150 per cent of pre-war, while it must be remembered that as German trade expands and intercourse with other countries thereby becomes closer the price level must rise to that common to the great trading countries of the world. Hence as the circulation of the currency slows down a continued increase in its volume must b expected, and such expansion must not ne cessarily be taken as implying a resuscita tion of the inflationary movement of th past few years.

Government Finances.

The rentenmark was introduced mainl to provide a suitable payment medium fo a transition period during which it was hope to bring Government revenue and ex penditure into equilibrium. How far ha this been achieved? The depreciation o the circulating medium had become so rapi before the establishment of the Rentenban that the revenue of the Reich, calculate in gold marks on the basis of the dollar quota tion, had become negligible, while at th same time expenditure had risen to suc enormous proportions as to constitute wha amounted to a one-sided budget. But sinc the Rentenbank began operations revenu has risen rapidly, while expenditure has de clined, so that for the time being the Govern ment has been able with the aid of the Ren tenbank to meet its immediate commitments The railways and the postal and telegrap services are no longer drawing large subsi dies from the Government; unemploymen relief and social services generally have bee severely cut down, salaries of State servant have been drastically curtailed, staffs reduce and economics effected in administrativ machinery.

Recently a budget on a gold basis has bee published covering the fiscal year to Marc 31, 1925. Ordinary revenue, in the shap of tax receipts and customs and excise duties is estimated at 5,144 million gold marks and ordinary expenditure at 4,942 millions. Extra ordinary revenue and expenditure balanc at 130 millions. On the total general ad ministrative budget therefore a surplus o 202 million gold marks is anticipated. I should be noted that these estimates are base upon the assumption that the economic unity of the occupied and unoccupied territorie will be fully restored. Failing this the Ministe of Finance estimates that the revenue wil be 950 millions less than the figures already quoted. In addition there is the budge for executing the Peace Treaty which en tails an expenditure of 640 million gold marks including 360 millions for the armies of occu pation but excluding any allowance for gene ral reparation payments. On balance there fore the total figures indicate a large deficit amounting to 1,388 millions if the Ruhr and

Rhineland are not evacuated and to 78 millions if these territories are restored to the Reich.

THE NEXT STEP IN MONETARY REFORM.

Throughout the whole process of stabilization during the past few months it has been emphasized that the Rentenbank is purely makeshift machinery, to give the Government an opportunity of re-organizing its finances preparatory to the erection of some more permanent mechanism. The necessity for a new institution to replace the Rentenbank lies partly in the fact that the latter cannot for long meet the ordinary credit requirements of the Government, even though that Government may be balancing its budget over a complete fiscal year. In addition it is clear that the rentenmark maintains its value purely by virtue of limitation of issue, and it is considered necessary to take steps to inaugurate a currency which shall have a more orthodox basis, or in other words to make a movement towards the gold standard.

Accordingly schemes have been formulated for setting up a new bank on a gold basis. Dr. Schacht, the President of the Reichsbank, has elaborated a plan, which was duly submitted to the first of the two Expert Committees set up by the Reparation Commission. The main principles of the scheme were adopted by the Committee who, according to a communiqué published early in February, had come to definite agreement on the broad outlines of a "new German gold note bank, which should exchange its own notes for those of the Rentenbank and Reichsbank".

In view of the fact however that any plan formulated by the Committee would have to be sanctioned by the Reparation Commission before being proceeded with and would therefore take some months to reach the practical stage, Dr. Schacht is continuing with his own scheme, having arranged with the Committee for the absorption of the new bank into the institution which may be set up in accordance with the advisory body's recommendations. The bill for the establishment of Dr. Schacht's "Deutsche-Golddiskontbank" or Gold Credit Bank, has now been passed by the Reichstag and reveals that the main features of the scheme are as follows.

The new bank is to be under the direction of the Reichsbank, which will subscribe for a bare majority of the shares. The total capital is placed at 200 million gold marks, and in order to meet its subscriptions the Reichsbank has already received assurances of a £5,000,000 credit from a foreign syndicate. The remaining 100 million gold marks is to be supplied by a German banking consortium. It may well be asked why it is necessary to set up a separate institution under the Reichsbank instead of re-organizing that body itself, but it appears that the foreign interests refused to grant the required credit except to an institution possessing a legal identity independent of that of the Reichsbank.

OPERATIONS OF THE GOLD DISCOUNT BANK.

The bank is intended primarily not to perform internal currency functions, which are already carried out by the Rentenbank and the Reichsbank, but to supply a link with external currencies by providing a medium for exchange dealings. The bank is granted a charter, expiring on December 31, 1934, and has the right to issue notes up to a maximum of £5,000,000. The notes in circulation must be backed by gold, bank notes and short-term bills in foreign currencies, and are to be convertible on demand into drafts on London or Bank of England notes. So long as the bank retains its note-issuing right no similar privilege is to be granted to any other bank, but this provision places no obstacle in the way of setting up a superseding bank, since the Reichsbank is given the power to liquidate the Gold Discount Bank at any time.

The conditions surrounding the issue of notes, as well as the fact that they are to be issued in terms of pounds sterling, indicate that the policy to be followed is that of pinning German currency to British. Hence the new bank is making its debut under a misnomer, since sterling is not synonymous with gold. What is being established is in fact not a gold discount bank at all, but a sterling discount bank—a distinction which carries with it more than a mere terminological interest.

The bank is not to be permitted to grant credits to the Reich nor to any state or municipality. Hence it is to act purely as a commercial bank. Its function as an exchange bank is emphasized not only by the fact that a large part of its capital is being subscribed by foreign interests, but by the immunity it enjoys, together with the Reichsbank, from certain exchange regulations, laws and decrees.

Economic Notes.

Indian Cotton Mills' Production.

Particulars compiled by the Department of Statistics, India, from accounts rendered by millowners, show that the total quantity of yarn spun in Indian cotton mills during the month of September, 1923, amounted to about 55 million lbs., and that of woven goods to about 38 million lbs. In the six months ended September, the quantities produced were 318 million lbs. of yarn and 192 million lbs. of woven goods. The production of coarse yarn (Nos. 1 to 25) in September was 47 million lbs., of medium counts (Nos. 26 to 40) was 8 million lbs., and of fine counts (above No. 40) 305,000 lbs. as against imports from foreign countries of 285,000 lbs. of coarse, 2,146 lbs. of medium, and 698 lbs. of fine counts. The production of Indian weaving mills during September, and the six months ended September, consisted chiefly of the description of goods stated below (in thousands of yards) :—

	September	April to September
Grey and bleached piece-goods :—		
Shirtings and longcloth	45,358	213,338
T-Cloths, domestics and sheetings	6,565	37,191
Dhoties	39,370	186,084
Chadars	6,636	27,988
Coloured piece-goods	44,104	244,046

The following statement compares the production (in thousands of yards) of piece-goods woven in Indian mills during the month with the imports of such goods from foreign countries :—

	Production	Imports
Grey and bleached piece-goods ..	118,077	82,967
Coloured piece-goods	44,104	42,645

The value of goods woven in Indian mills in September, as far as reported, was Rs. 5,05,00,000, in which the share of the Bombay cotton mills was Rs. 4,14,71,000. The value of cotton goods imported from foreign countries during the month was Rs. 532 lakhs. The exports of Indian yarn to foreign countries during the six months, April to September, 1923, were 21,025,000 lbs., as compared with 33,327,000 lbs. and 51,026,000 lbs. in the corresponding periods of 1922 and 1921 respectively. The excise duty realized on woven goods during the month of September amounted to Rs. 11 lakhs.

British Cotton Mills' Bad Year.

Shareholders in cotton mill companies have never experienced such a disastrous year as the one just closed since the inception of the limited liability movement over half a century ago. Only ninety companies, out of a total of 310 companies whose dividends have been tabulated, have been able to make any return on their capital during the year. The total paid-up share capital of these 310 concerns, controlling over 33,000,000 spindles, was £48,552,776, and during the year they distributed £824,036 in dividends, the average return per company being equal to £2,658, or 1·7 per cent on the total called-up capital, against 2·7 per cent last year. Over 170 firms have now worked two years without paying any dividends including eighteen original companies, ten recapitalized companies and 146 refloated companies. Only eight firms were able to pay a dividend this year after passing payment in 1922 and two other slightly increased their distributions, but these firms were chiefly engaged in spinning Egyptian yarns, the most profitable section of the market throughout the year. During the year twenty-eight companies have made calls on their members for a portion of the uncalled capital and these have absorbed over £1,000,000 of fresh money for the trade most of which had to be drawn from the unsecured loan capital of other mills, and the realization of shares, which has accentuated the general decline in values of mill shares.

Prices of Foodgrains in India.

The average level of wholesale prices of cereals and pulses in India on or about the 15th January, 1924, showed a rise of 1 per cent as compared with a fortnight ago. Prices of jowar and bajra increased by 3 per cent, arhar dal by 2 per cent, and gram by 1 per cent, while those of rice fell by 2 per cent. Wheat, barley and maize showed no fluctuations. There was an increase of 1 per cent in the price of salt but raw sugar (*gur*) declined by 2 per cent. The price of ghee remained unchanged. As regards provincial prices the noteworthy fluctuations were as follows :—(1) In Bihar and Orissa, an increase of 17 per cent in the price of jowar, and 16 per cent in bajra, (2) in Delhi, a fall of 13 per cent in rice but an advance of 11 per cent in arhar dal, (3) in Sind-Baluchistan, a rise of 16 per cent in salt. Prices of rice in Bengal and wheat in Punjab were stationary.

Books in Brief.

Short Reviews of Recent Books.

Social Aspects of Industrial Problems.

By Gertrude Williams, B.A. Published by P. S. King & Son, Ltd., Orchard House, 2 & 4, Great Smith Street, Westminster, London. Price 6*sh.* net.

It is a sign of the times that the human element in modern industry is receiving increasing attention. Mrs. Williams touches on certain important industrial problems in the light of a social standard. She does not attempt to exhaust her subject but rather tries to fix attention on certain recent developments. Her first chapter "Human Values in Economics" is typical of the whole volume. It is worth reading for its live human touch. Among other interesting chapters in the book are "Unemployment", "Women in Industry", and "Government and Industry". The last of these deals with "Nationalization" in a remarkably judicial manner. A book to be read and pondered by all industrialists and publicists in this country.

Unemployment—A Study of Causes, Palliatives, and Remedies.

By W. A. Appleton, C.B.E. Published by Messrs. Hodder and Stoughton, Ltd., London. Price 1*sh.* net.

Lord Askwith, K.C.B., writes a characteristic preface to this stimulating volume in which the following sentences occur:—"Mr. Appleton's book should be read with care by many readers. I am not sure that it gives sufficient weight to the discoveries and applications of science, or to the question of population in these small islands, but the outcome of his thought is a distinct aid in the consideration of a question which ought to be present to the minds of all of us." Mr. Appleton begins his preface with these words:—"Amongst the greater of the economic follies is that of spending wealth merely because one happens to possess it or is in a position to *borrow*, or is strong enough to steal it." Of course he gives no quarter to this folly in his book. He has scant regard for capital levy and "similar expedients" as means for maintaining the unemployed. His book is a frank and outspoken one but we fear it is a little too trenchant to carry weight. It is, however, written without bias and offers suggestive ideas to those who would desire a remedy and not a palliative to the employment question. What becomes of an industrial nation of the Western type after fifty years of industrial development and strife is well set out in this book incidentally for Indiain readers. If we are to avoid these demoralizing effects of industrialism, we should see to it that they do not arise here. Mr. Appleton's book is both a reminder and a caution to those who will heed.

The Story of Satara.

By Major B. D. Basu, I.M.S. (Retd.), edited by Ramananda Chatterjee, Editor, *The Modern Review*, *Modern Review* Office, Calcutta.

In this book—dedicated to the "People of the Deccan" among whom Majot Basu spent the "happiest days" of his life—is unfolded the tragic story of the Satara Raj, mainly from document sources. It has to be admitted that the case as presented by Major Basu is an unassailable one. What is the tribunal at which it could be settled? In the old days of the Company, the perpetuation of a wrong was more often persisted in than in modern times. The Satara Raj was one of the victims of the old "system". Quasi-international law seems to be the best thing to adopt in cases of this kind and special tribunals of arbitration should be resorted to as often as required. Executive action is to be deprecated.

Acknowledgments.

[*From the International Labours' Office.*]

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8. International Conference of Labour Statisticians. *Sh.* 1/3.

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Mysore Finances.

By A. R. Banerji, Esq., C.S.I., Dewan of Mysore. *

Soon after I assumed charge of the Dewanship I took the opportunity, when the Budget Session of the Representative Assembly met in June 1922, to lay before that body an outline of the financial policy which His Highness' Government had decided to adopt, to bring about an early improvement in the financial position of the State. Referring first to the decennial review published in 1919, which disclosed a recurring deficit of Rs. 15¾ lakhs and explaining the position as it stood with reference to the transactions of the three years ending with 1920–21, I urged the necessity for balanced budgets. I diagnosed the situation as it then existed in the following words :—

"The true diagnosis of the situation, I think, is that owing to the general prosperous condition of the State and the steady increase in its revenues, there was a growing desire to expand the activities of Government, to increase expenditure on measures for the improvement of the material and moral condition of the people and to start large schemes and public works involving heavy capital outlay, somewhat in rapid succession, with the object of increasing the wealth of the State and its general economic prosperity. In the zeal and eagerness to finance these schemes and projects, no provision could be made for reserves and the uncertain items of revenue as well as revenues received from capital works and investments have been made use of to meet the additional heavy liabilities undertaken under recurring expenditure. This could not perhaps be avoided owing to the heavy and onerous programme of capital works to which the State had been committed, but the increase in expenditure as indicated by the inflated figures in recent years does not really and truly represent the exact degree of expansion in the administration of the State. For, the increased cost of living has necessitated the grant of relief to subordinate services to the extent of about Rs. 20 lakhs of additional expenditure per annum, the cost of the upkeep of the army and of materials and other necessaries for the different service departments has gone up enormously and the cost of materials for works and wages of labour have also risen. Due allowance has to be made for these factors before we can correctly estimate the real increase in expenditure due to expansion in recent years. The fact remains, however, that we are now confronted with a position of recurring deficits, and it is necessary to evolve a sound financial policy which could be spread over a triennium or a quinquennium by which the deficits may gradually be wiped out and we may regain our former financial position."

I calculated that the real situation was that a deficit of Rs. 21 lakhs, after taking a fairly liberal estimate under some of the principal heads of revenue, had to be faced even under a restricted scale of expenditure in the various departments of administration. The gross expenditure of the State in 1920–21 had touched the highest level ever reached, *viz.*, Rs. 344 lakhs and the Budget Estimate of 1922–23 was based on effected retrenchments up to a total of Rs. 45 lakhs ; and on the standard of the budget then presented, I estimated that there should be an improvement to the extent of

* Part of Speech made before the Mysore Representative Assembly, June 1924.

Rs. 56 lakhs a year in the finances of the State and generally indicated the manner in which an attempt might be made to bring about that result. The important principle in the financial policy then formulated was that the different kinds of resources should be classified according to their nature so that each class of revenue might provide for all reasonable demands against it. Items of revenue occasionally received should not be mixed up with the normal revenues of the State and uncertain revenues should only be used for non-recurring charges. Lastly, the group of productive works should have financial autonomy so that ordinary revenues of the State may be able to support fully the normal administration, and capital works finance may be gradually separated from administrative finance.

In giving the 7 years' finances in their true perspective, I worked out the deficits in the account of the normal heads of revenue and expenditure and showed that the deficit in the year 1920–21 reached the high figure of Rs. 73 lakhs.

Lastly, I formulated the financial policy for a triennium at the end of which I anticipated that our finances would be restored to a position of equilibrium. The normal revenues were according to the budget of 1922–23 short of the normal expenditure by Rs. 21 lakhs, and it was intended to balance the whole account in three years' time by following a policy of retrenchment and expansion of revenue wherever possible, taking credit for Rs. 11 lakhs out of the Sterling Loan Sinking Fund annually in the Revenue Accounts.

In my Budget Speech of last year, I explained that my revenue anticipations were likely to be realized, as in the first year of the triennium —1923–24—an increase of Rs. 14 lakhs was expected and a further increase of 11 lakhs might be counted upon in the remaining 2 years. The net result of the budget, as then placed before the Assembly, was that it balanced on the right side after a series of deficit years and showed a surplus of Rs. 63,000. I may add that if you compare the figures of 1918–19 and 1924–25 you will find a total increase of revenue of Rs. 40 lakhs and the difference between the actuals of 1921–22 and the estimates of 1924–25 is a sum of about Rs. 23¾ lakhs.

Accounts of 1922–23.

When dealing with the Revised Estimates for 1922–23 last year, I informed the Representative Assembly that we had received a sum of Rs. 23¾ lakhs towards the surplus revenue of the Bangalore Assigned Tract, of which Rs. 13¼ lakhs representing part of the arrears payable for the three years preceding 1921–22 would be shown as an item of extraordinary receipt. I also stated that according to the Revised Estimate framed at the time, the year 1922–23 was expected to close with a surplus of nearly nine lakhs, including the extraordinary receipt from the Assigned Tract, against a deficit of Rs. 5¼ lakhs according to the Budget Estimates of the year. The actuals for the year, however, show further improvement resulting in a surplus of Rs. 13.50 lakhs.

In view of the improved position revealed by the actuals, orders were issued for the extraordinary revenue from the Bangalore Assigned Tract being adjusted by transfer, partly to the Sinking Fund for loans towards the arrears of contribution due to the fund, and partly to the Reserve for non-recurring expenditure to provide for certain special charges to be met during the current year on account of repairs necessitated by damages caused by floods, the Viceregal Visit and the introduction of Reforms. The amount accordingly transferred to the Sinking Fund in the accounts for the year 1922–23 is Rs. 7.08 lakhs and that set apart for other purposes Rs. 6.19 lakhs and the year closed with a normal surplus of Rs. 22,637.

Revised Estimates, 1923–24.

According to the Budget of 1923–24, we estimated a total revenue of Rs. 3,31,50,000 and a total expenditure chargeable to revenue of Rs. 3,30,87,000 providing for a surplus of Rs. 63,000. The adverse seasonal conditions resulting from the failure of the north-east monsoon and the consequent distress in the districts of Kolar, Tumkur and Bangalore have affected almost all the principle heads of revenue, under which there is a fall in the aggregate according to the Revised Estimates, of over Rs. 9 lakhs, the reduction under Land Revenue alone being over Rs. 5½ lakhs. Out of the Bangalore Assigned Tract Revenue of Rs. 13,04,000 expected to be realized in the current year, Rs. 5 lakhs which has already been received is on account of arrears and it will be shown as an extraordinary item of revenue as was done last year in respect of a similar arrear payment. The decrease in consumption of arrack mainly accounts for the reduction of about Rs. 3 lakhs under Excise. The payment of the Railway Surcharge Tax collected by the Government of India along with freight on goods during the War, which was till now under correspondence,

accounts for the increase of Rs. 2 lakhs under XIII Miscellaneous. The variations under other Revenue heads, which do not call for special remarks, are explained in the Memorandum accompanying the Budget Estimates. The total revenue according to the Revised including the extraordinary revenue of 5 lakhs from the Assigned Tract is Rs. 3,29,02,000 which is only Rs. 2,48,000 less than the Budget Estimate, the decline in revenue caused by the abnormal seasonal conditions being to some extent counteracted by increase of revenue under Assigned Tract, Mining Revenue, Railways and the special receipt on account of Railway Surcharge Tax.

Against the total expenditure of Rs. 3,30,87,000 provided for in the Budget for the current year, the Revised Estimate shows that the expenditure is likely to be Rs. 3,29,12,000, *i.e.*, a decrease of $1\frac{3}{4}$ lakhs, after meeting the additional expenditure on account of the Viceregal Visit, repairs to damages caused by floods, and the introduction of the Reforms from the amount transferred to the Non-recurring Reserve out of the extraordinary revenue realized in 1922–23, and that on Famine relief operations from the Famine Reserve. The increases over Budget allotments observed under Forest (Rs. 85,000), General Administration (Rs. 3,92,000) and Public Works (Rs. 2,51,000) are largely on account of the Viceregal Visit, the Inaugural Session of the newly Constituted Representative Assembly and the Legislative Council and repairing of flood damages and have been mostly met from the Non-recurring Reserve. The heads under which there are noticeable increases are Interest on Debt (Rs. 2,10,000) and Miscellaneous (Rs. 97,000). The increase under the former is mainly due to arrear interest paid on the investment of the surplus balances of certain Muzrai Institutions in the $6\frac{1}{4}$ per cent Loan. The increase under "Miscellaneous" represents the interest recovered from certain indebted members of the late Agricultural Banks at Saklespur and Chikmagalur ordered to be adjusted towards the principal of the loans due by them.

The deficit of Rs. 5,10,000 shown in the Revised is calculated by taking only the ordinary revenue and by showing the full demand to the extent of Rs. 18,78,000 on account of Sinking Funds.

Including the extraordinary revenue of 5 lakhs from the Bangalore Assigned Tract, the Revised Estimate for the current year is really balanced, the difference being only Rs. 10,000. The position is that the bulk of the contribution to Sinking Funds is paid from normal revenues and the balance of Rs. 5 lakhs from an item of extraordinary receipt and that, on the whole, the resources of the year are adequate for all the demands to be met. That this result has been realized in spite of the dislocation to which the original Budget Programme was subject will, I believe, be considered as a matter for gratification. I hope that the actual results of the year will prove to be better than the forecast made in the Revised Estimate. I stated above that 1922–23 was the first year of a blanced Revenue Account after some years of deficits and I am glad to be able to state that the second year in succession, namely, the current year, will also have a balanced account.

Budget Estimates, 1924–25.

In the next year's Budget, a total revenue of Rs. 3,35,84,000 is anticipated as against the Revised Estimate of Rs. 3,24,02,000 for the current year and the total expenditure to be met from this revenue is placed at Rs. 3,35,15,000 resulting in a surplus of Rs. 69,000. In drawing up the programme for next year, the foremost aim of the triennial financial policy that the budget must be balanced at any cost has been scrupulously observed and full provision has also been made from current revenues for the contribution payable to the Loan Sinking Funds. The variations in revenue and expenditure as compared with the Revised for the current year are dealt with in detail in the Memorandum attached to the Budget. Only the more important features of the revenue and expenditure estimates for the next financial year need be alluded to here.

On the revenue side, a sum of Rs. 6 lakhs has been taken credit for under Assigned Tract Revenue. Assuming that normal conditions will prevail, we have taken into account under Land Revenue the collection of the bulk of the arrears expected to remain at the end of the current year owing to unfavourable seasonal conditions, and providing for normal growth and a small increase on account of resettlements to come into effect next year, the estimate under this head has been fixed at Rs. 121.75 lakhs. The revenue from Excise has been taken at the Resived Estimate figure of the current year. The Revised under Forest includes a receipt of Rs. 4 lakhs on account of fuel supplied to Iron Works and as this amount appears under receipts and expenditure, inflating both sides of the account,

it has been decided to omit these transactions under Forest and include them only in the Iron Works account. There is an increase of 4 lakhs in the revenue from Sandal Oil compared with the Revised and this is due to the fact that all adjustments on account of excess payments for wood made in the past to the Forest Department by the Sandal Oil Factory will be completed in the current year and commencing from the next year the full revenue due for wood, determined with reference to the quantity of oil sold, will be directly brought under the head Forest. The improvement in Railway net receipts is the result of increased gross earnings and reduced working expenses. The grant allowed for renewals of permanent way and rolling stock which have been in arrears for some time past in respect of the lines worked by us is Rs. 6.87 lakhs. There will be a perceptible decrease in the outlay on this item from 1925–26 and it is proposed to set apart the resulting increase in the net receipts or a portion of it, as may be found necessary, according to a programme to be drawn up for the purpose, for the formation of a depreciation fund to provide for renewals in future, instead of appropriating the whole of the net revenues for the general purposes of the State. Larger receipts expected from power supplied to Gold Mining Companies and the absence of charges for repairing the damages caused to the Dam by floods for which an additional grant had to be sanctioned this year, chiefly account for the increase under Electrical and Krishnarajasagara Works.

The total expenditure provided in the Budget is Rs. 335.15 lakhs as against Rs. 329.12 lakhs in the Revised Estimate of the current year and it is therefore Rs. 6.03 lakhs more than the standard reached in the Revised. A sum of Rs. 3 lakhs has been added to His Highness' Civil List. For the measures already sanctioned, it has been found necessary to raise the grant for Education by Rs. 1.30 lakhs. The grant for the Mysore University has been raised from Rs. 6 lakhs to Rs. 7.44 lakhs. The total increase under Education including the University is therefore Rs. 2.74 lakhs over the current year's Budget grant. An extra grant of half a lakh has been allowed for Mysore City Improvement and an increase allotment of one-fourth of a lakh for Malnad Improvements and to meet the additional expenditure due to the introduction of Constitutional Reforms, a sum of Rs. 1,08,000 has been allotted. Besides these grants, provision has been made, as far as funds permitted, for development and expansion, and some of the new items are the following :—

	Rs.
12. General Administration, Economic Conference, special charges	10,000
13. Muzrai, Construction and Repairs	5,000
17. Miscellaneous, New Telegraph Stations	7,500
18. Courts of Law—	
(i) A new Sub-Court ..	5,000
(ii) Additional Criminal Courts under the Separation Scheme in the Hassan District	12,000
21. Medical—	
(i) Training Mysore Students	15,000
(ii) Revision of establishment of certain hospitals and opening of new dispensaries	16,000
(iii) Re-organization of Ayurvedic College and opening of new dispensaries ..	6,300
27. Agriculture—	
(i) Serum	20,000
(ii) Special establishment and equipment for sinking irrigation wells ..	25,000
(iii) New Veterinary dispensaries	5,000
(iv) Training of Veterinary Inspectors at Muktesar ..	3,000
(v) Development of Marthur Farm	10,000
30. Grants for Public Improvements. Grants-in-aid to District Boards under Local Self-Government Scheme	5,000

Review of Financial Situation.

The financial position as disclosed in the statements that are now presented to you and the explanations that I have made in respect of their main features will, I hope, be considered on the whole satisfactory. It is needless to assert that the Mysore finances still require the most careful handling and that we have not altogether emerged from the condition of unsoundness which commenced from the year 1918–19 and which marked the beginning of the period of deficits. You will observe that under a definite policy of financial re-habilitation which comprised within its scope drastic retrenchments spread over a period of more than two years and restricted grants to the various Development Departments which in consequence have remained in a state of

stagnation and inactivity, we are now fairly on the road which will lead us to the goal which we have set before us. There are, however, a few disturbing factors which have yet to be faced and these require careful consideration. The revenues of Indian States, as you are aware, are of an inelastic character. There is little scope for the expansion of normal revenues and the addition of new sources. There is, in addition, the disadvantage which the State is at present labouring under, *viz.*, that owing to a very heavy public debt raised for large productive works all of which have not yet reached the stage of yielding revenue, there is a drain to the extent of about .42 lakhs of rupees from the yearly revenues; in other words, according to my classification of our resources, Part III of the Account relating to financial investments and productive works still continues to show a deficit. Owing, further, to the total absence of any provision in the past for a Depreciation Fund under Railways, a defect which is almost universal in all Railway Administrations in India, we are now in for very heavy expenditure on account of renewals which leaves comparatively little as net revenue from our Railways. Heavy commitments under Capital expenditure in regard to large projects and schemes embarked upon and which have to be brought into a stage of completion render the problem of ways and means for such expenditure without further public borrowing extremely difficult. An estimate of such capital expenditure, in the next few years, may roughly be placed at nothing below Rs. 50 lakhs a year. This will necessarily mean an additional liability on account of interest and sinking fund charges if it has to be found from borrowed money. It is, therefore, absolutely necessary to devise measures to increase the revenues under Railways, Electric, and Krishnarajasagara, and to make vigorous efforts to put the Mysore Iron Works on a proper financial footing. Whatever measures may be adopted towards these objects, they cannot be expected to produce immediate results and disappointments and losses are to be anticipated, specially in regard to the Iron Works, for some time to come; and this brings us to the question as to how the Mysore finances can be relieved of the undue strain under which they are now labouring.

There are three important directions from which substantial relief may be expected and these have been briefly referred to in my last Birthday Address to the Representative Assembly. It may, therefore, be of interest to you to know what further progress has been made in regard to those matters during the past one year. Correspondence between His Highness' Government and the Government of India on the subject of utilizing the accumulated Sinking Fund intended for the Railway Sterling Loan has reached a satisfactory stage. If the final representation on this subject is successful, as we hope it will be, it will enable us to tide over three years at least so far as Capital expenditure is concerned without further borrowing. In regard to the Surplus Revenues of the Assigned Tracts, the position was rendered very uncertain by the orders of the Secretary of State issued in May last year, in respect of which His Highness' Government made representations to the Government of India last October. As the result of those representations, the Government of India were pleased to reopen the question for discussion and recently a scheme of settlement has been agreed to between His Highness' Government and the Hon'ble the British Resident which, it is hoped, will be finally accepted by the Government of India and the Secretary of State. This settlement will remove, at least for 10 years,—the period of the proposed agreement,—the uncertainty in regard to the Assigned Tracts revenue which has disturbed the Budgets of the past few years.

There is another subject of vital interest to the finances of the State, which has been actively pursued by His Highness' Government for some time past. I refer to the question of the Mysore Subsidy. A representation was made in 1919 to the Government of India for the total abolition of the subsidy on historical, economic and equitable grounds. Recently, as announced by His Excellency the Viceroy at the banquet held in his honour in Mysore, a general scheme of rebate of tributes has been formulated and communicated to us and we have been requested to submit our claim in accordance with the scheme. The general principle of remission of a tribute is that if the total Military expenditure including the tribute exceeds 15 per cent of the gross revenues of the State, a rebate to the extent of the difference will be sanctioned. After a careful examination of this formula, from the point of view of the Mysore State, His Highness' Government have considered it necessary to make further representations. As the matter is still under correspondence, I am not able to make a more

definite statement as to the relief anticipated; but it is earnestly hoped that the British Government will view our representations in that spirit of fairness for which they are justly famous.

In my last Budget Speech, I also referred to the two representations which had been made to the Government of India, one in respect of the Report of the Indian Fiscal Commission so far as it affects the Mysore State and the other on the subject of Customs Revenue. In regard to these matters there has been no substantial progress made although we are still pressing for the recognition of our claims. Mysore has a legitimate claim for a share in the Customs revenue collected in British India in so far as it is contributed by His Highness' subjects and the whole question of Customs and Excise duties has to be reviewed in the light of the changes in the policy of the Government of India itself as well as in the light of future developments in India towards federal finance. The question of the indirect contribution to the Imperial Exchequer is not a new one and it was raised by the late Sir K. Seshadri Iyer so far back as 1896. We raised it again in the year 1919 in connection with our representation relating to the subsidy. We have besides expressed our agreement with the view contained in the Memorandum submitted by Indian States claiming a share in the Customs revenue.

In view of the changes that are likely to be introduced in the Central Indian Government, the Provincial Governments as well as the Indian States, it is absolutely incumbent upon us to press these matters for the consideration of the Government of India as vigorously as possible so that not only the Mysore interests may be safeguarded, but the Mysore State may get its share of the revenues to which she is rightly entitled. It is also necessary, in this connection, to press again the view expressed in the representation we made last year in regard to Customs and Tariff Policy. We referred to the recommendations in the Report on Indian Constitutional Reforms and urged that means should be provided to secure a joint deliberation between the Government of India and Indian States in all matters of common interest, of which the Tariff Policy of the Government of India is one. Such joint deliberation is essential and the Mysore State should press for representation on any Committee or Assembly in which such deliberations take place. With a view, therefore, to protect the interests of the Finances of Mysore generally and as a matter of vital concern to the State, His Highness' Government are now making further representations in regard to these large questions and they will not rest contented until a satisfactory decision is secured.

However persistent our efforts may be to improve our financial position by all internal measures of economy and development of revenue, it is unlikely that we shall enter in the near future the era of surpluses, unless substantial relief is given in the Subsidy and unless the legirimate claims of Mysore to Customs are fully recognized. Our Railway extension policy is at a standstill; the further development of the Krishnarajasagara project under the definite programme which has now been decided upon after the conclusion of the agreement with the Government of Madras, the extension of Primary Education, the development of Agriculture, Commerce and Industries, improvement of tanks, the opening of new irrigation works, all these have to lie over for an indefinite period if our resources are not substantially augmented. Such a state of things cannot but be viewed with disappointment and anxiety. Without sufficient reserves, it will be obligatory on our part to resort to public borrowings which, in the case of works like irrigational works which cannot be expected to pay soon or pay fully, will mean a larger drain upon the annual resources of the State, bringing in its train restricted activities in the various departments of administration, general inefficiency and stagnation.

Mr. Gordon Selfridge, in the course of a lecture in London, remarked that the sin of laziness was the greatest man could commit. The idea of going down by the sea and looking at the blue sky for two weeks was the epitome of laziness. A man of good health and of fair strength could do almost anything of a material nature which he desired to do. Another thing teachers could develop was judgment. Judgment was the leading quality which they should strive to place in the mind of the young. One other characteristic, the most nearly God-like, was the power of the imagination. Imagination was the mother of originality. It was like the great tornado which blew through the forest levelling the trees. It cleared the path through which judgment could take its way calmly. Imagination and judgment coupled together were responsible for the great accomplishments in this world.

University Education in India.

By H. E. Lord Reading, Viceroy of India.*

Ever since I came to India I have taken a keen interest in the Universities, and whenever I have been at a university center and have had the opportunity I have visited the university and made the acquaintance of those who conduct its affairs and instructed myself regarding the work of the university and its influence. These individual visits have been a source of pleasure and interest to me, and I trust I have been able in my addresses to convey my high conception of the great mission of university teaching and training and my personal conviction of the extreme importance of university work in India in its effect both on the individual and the country as a whole. If by my visits I have communicated in some measure my desire to stimulate and encourage those who share my ideals for the true scope of university teaching to look with confidence beyond the local problems and difficulties of the moment confronting the administration of a particular university to the higher and wider planes which await successful university development my solicitude has been amply repaid.

Many of those here to-day I have had the pleasure of meeting within the walls of their own universities. It is a pleasure to meet them again and to meet them together, and from this assembling of representatives of various universities I entertain great expectations. The advantages of collecting representatives together in a conference may not at first sight be apprehended. It is true that each university is self-contained. It has its own work to perform and the needs of its own centre and clientele to provide for. To a large extent its destiny lies in its own hands and it is master of its own fortune, and alone responsible for its own success or failure. Nevertheless, in the history of a country the more important factor is not the success of an individual university, but the influence and effect of university policy and education as a whole. To take an example from the scheme of the universe in the world, a particular flower may have beauty, colour, scent, perfection of form or perhaps uses peculiar to itself, but its importance in the general scheme of creation is not comparable with that of the flower world as a whole with its infinite variety of beauty, form, colour virtues and uses. We might deplore the loss of a single species, but any change affecting the whole flower world would be an unthinkable calamity.

The Government's Responsibilities.

I have stated the fact of my constant interest in Indian Universities. Let me explain more precisely the reason for it and for my personal satisfaction in inaugurating this conference. It may appear that as education is now a provincial subject and as the connection of the Government of India or of the Indian Legislature in regard to universities has only been prescribed in certain particular cases for special reasons, the Governor-General and the Central Government cannot be supposed to be directly interested in their affairs. It is true that university administration is largely now and rightly a provincial care, but the abstract idea which underlies all forms of university activity is of such cardinal importance that it is woven into the principal functions of the Government of India and the Governor-General. The outcome of the spread of university teaching, if it achieves success and exerts its proper influence, is to set an intellectual and moral standard for the people of India as a whole. It should be the principal formative influence in the development of capacity in these directions. Its highest ideal is not to rest content with the production of individuals of brilliant attainments, but to ensure a permanent progress in the mental outlook of the people as a whole and to give birth to a higher moral tone in general and to a more widespread striving for enlightenment. The responsibilities of the Government of India for the administration and progress of the country and the charge which has been laid on me as Governor-General by the King-Emperor in his instructions that the Governor-General should use all endeavour consistent with the fulfilment of his responsibilities to us and our Parliament for the welfare of our Indian subjects cannot be fulfilled unless I and my Government take a direct interest in fostering these ideals and in assisting towards their consummation.

Education's Sublime Purpose.

A healthy national life depends on the wide dissemination of a desire to arrive at balanced

* Part of Speech made at the First Indian Universities Conference, held at Delhi on May 19, 1924.

judgments of the ideas of duty and discipline, and of the common responsibilities and mutual obligations. These can only come by the spread of an atmosphere which it is one of the most important functions of the universities to diffuse. We have to travel away from the narrow and circumscribed view which regards education only as a means of individual advancement or profit, and pass out towards the broader horizon where education is destined to achieve a higher purpose to lead the man intellectually endowed and aided by the illuminating quality of imagination to those greater altitudes from which to reflect honour and glory upon his fellowmen and his country. Where these conditions have been established those who have profited by university teaching will look back on their university days not merely as an episode serving an individual and material end, but as an epoch in their lives which beckoned along the road of honour and duty.

Let me now turn to the objects which this Conference primarily has in view. In order to appreciate to the full the necessity for this Conference in addition to the consideration of the importance of fostering the common ideals already explained a brief review of university history in India is essential. University history in India started with the foundation of the Calcutta University in 1857. By 1887 four more universities had come into existence and these five institutions continued to exist and cater for the needs of academic education in India until 1916. These universities were all of the affiliating type. This system was well adapted for the first steps but as the demand for education increased it outgrew, as is now generally admitted, its usefulness. There was no limit to the number of institutions which could be affiliated to a university and for the 30 years which elapsed between 1887 and 1916 the increasing demand for university education was met not by the creation of new universities, but by adding to the number of the affiliated colleges or inflating their capacity. The strain on the central organizations which were not designed to cope with this unwieldy growth and the weakness of the tie with and between the group of constituent colleges often situated several hundred miles apart and in a position to contribute nothing to the vitality of the university gradually drained all the reserves of strength and resulted in a loss of efficiency. Paralysis seemed imminent which would for ever impair the beneficent activities, both of the body itself and of its members.

A Stimulus to University Reform.

The Government of India were alive to the danger and broke new ground by advocating a restriction of the area attached to the affiliating universities by the creation of separate universities for each province and by the institution of local teaching and residential universities within each province with a view to secure more progressive educational efficiency. Local patriotism and communal enthusiasm also came to the aid of the Government and to one or other of these various causes may be ascribed the birth of seven new universities in British India since 1916. A powerful stimulus to university reform and strong support for the establishment of the unitary teaching type of university, advocated by the Government of India, was also created by the Report of the Calcutta University Commission. It is no exaggeration to say that the whole course of university education has been profoundly affected by the publication of this Report. No aspect of the functions of a university in India, of the needs for which it should cater, or of the conditions essential for its success escaped the careful survey of this Commission. The highest praise of the labours of the members is to be found in the fact that though only dealing with the Calcutta University their conclusions were at once recognized as applicable or adaptable to the whole of India, and not only has all the legislation for the incorporation of new universities since the publication of theCommission's Report embodied features from their recommendations, but some of the older universities also have in some respects remodelled their structure on the lines advocated by them.

We are now at a period in the history of the universities in India where there has been a sudden increase in the number of universities. The growth has been phenomenal. In less than a decade the number of universities has doubled. We are also at a stage where transition from an older to a newer type is in progress. The new universities are taking different shapes in addition. Apart from the changes in the external structure we are living in an era of university reform affecting the internal composition of each edifice. This reform is proceeding, hampered, it is true in many cases by difficulties of finance but proceeding nevertheless with a wider horizon of intention and a greater variety of aims than at any past period of university history in India. I need scarcely point out that at such a time it is essential to ensure the preservation of the

highest standards of university education and to safeguard against any falling away from the ideals of the best class of university training.

THE TASK BEFORE THE CONFERENCE.

With a multiplication of institutions, with alterations in the type, with changes in the internal systems and with financial stringency affecting the complete execution of projects there is no small risk of some deviation from the right road to educational efficiency. It is a time for conserving and strengthening resources and for using them to the best advantage. It is a time when the newer may lean to some extent on the garnered experience of the older foundations and when the latter may in turn derive some assistance from the newer methods under trial in the former. It is a time for mutual help and for co-operation between universities. A united front must be shown. There must be a joint effort to develop higher education in India to the highest standard. There must be a combination to meet reasonable criticism and to remedy the defects. Some uniformity of internal organization seems desirable if there are to be no weak spots in the general system. The work of reorganization and development lies primarily in the hands of each individual university with the help and control of the Local Government, but the Government of India will always take a profound interest in the progress of the universities and it is with the hope of strengthening the structure as a whole and of adding solidarity to the general system that they have initiated this Conference.

The recent advance in the quality and scope of university teaching in India has been remarkable. It should be a source of satisfaction to all those who have laboured to bring it about and I congratulate them upon the achievement. Nevertheless we should not rest complacently on our laurels. We cannot conceal from ourselves that we have a vast field still to cover. If the highest standards had already been reached we should not find so many of our brightest students leaving India to complete their education and to seek degrees in England or foreign countries. We must confess to a need for further development in many directions, more especially in higher technological education. We are conscious that our medical courses have not attained the standard which is elsewhere regarded as the highest. Though India has vast potential resources in the mineral world lying undeveloped no facilities, I believe, exist at present for the advanced study of mining engineering in India and the only school of mines is still in the stage of being constructed. The higher education of women also is still in its infancy. I have mentioned only a few instances out of many, not in a spirit of reproach, because I am fully conscious of the great work that has been accomplished and of the difficulties that have been surmounted in the fields we have already explored, but with a desire to advance the ideal with which I know you are all in sympathy of striving to perfect our university education in India and to attain the highest possible standards. I trust that I have now made clear the special needs which my Government hopes may be served by this Conference and the directions in which the results of the Conference may be expected to benefit individual universities and university education as a whole. If in some degree these expectations can be realized, we shall derive permanent advantages from this first Conference of Indian Universities.

THE EMPIRE OF REASON IN INDIA.

Before I conclude let me bring to your notice one aspect of the influence of universities to which I attach the highest importance. I need not lay stress on the great part each university plays in the life of the local or provincial community or on the still more important part Universities may be expected to play in the life of India as a whole if by co-operation and mutual assistance between the Universities those common ideals and that united strength and solidarity for which we all hope can be attained. If I were to be asked what is the greatest service the universities can perform for India I should be in no doubt as to my answer. I should reply to extend the Empire of reason in India until it is coterminous with the Empire of India itself.

It is a commonplace fact that one of the effects of university education should be to produce in the individual to a greater or lesser degree, according to his capacity, the power of forming a balanced judgment by the exercise of reason on a careful examination of ascertained facts. This should be the first characteristic of the scientifically trained and scholarly mind. A mind of this mould will first strive to determine whether the whole of the facts and the whole material necessary for the decision have been marshalled for examination. The examination of the meterial will proceed by testing each component part and assigning to it its correct relative value to the whole. This process can only be successfully carried out by the operation of unbiassed

reasoning and by banishing all shadow of prejudice and assumption from the test. In the end the accurate result is only attained by the exercise of an untiring capacity for probing each feature of the case and of a passionate desire to find the truth. These are the mental processes which lead up to a reasoned judgment. Difficult as they may appear they are nevertheless inherent in the powers of the human mind and only need cultivation to secure their growth and expansion. Without such cultivation the mind is prone to rely excessively upon sentiment, intuition and impulse.

Sentiment Tempered with Reason.

Let me examine for a moment these springs of human action. Sentiment may be and indeed often is noble. It is universal. There is no mind so dull, no nature so callous that some spark of sentiment cannot be found in it, but sentiment alone is an unsafe guide to decision. It is too often exercised on an object before reason has time to ascertain whether the object is worthy of its exercise. It is nearly related to prejudice. By itself it is an insufficient and unstable ballast for any nation and by trusting to it alone nations have suffered the ship of State to wreck. To weather the storms and to bring the vessel into safe harbourage sentiment should be controlled and guided by reason. Intuition has its value but for the individual or the nation it is a mental short-cut which offers no assured return to the high road. If reason is sufficiently developed it can reach with certainty that end which intuition may only occasionally attain. Impulse is closely allied to intuition and carries with it the same uncertainty. It is perhaps the commonest of all springs of human action. When not controlled by reason it is surely the most unsafe of all guides. Nevertheless sentiment, intuition and impluse have their bright moments. They do not resemble reason, which like the sunshines with a light constant, uniform and lasting, for sentiment, intuition and impulse although at times a spark of divine afflatus may inspire them are meteors alas only of an uncertain lustre, irregular in motion and delusive in direction.

It is a high function of university teaching to provide them with the sure light of the torch of reason, to hand it on from hand to hand until it has illumined the uttermost dark corners of this country and to spread abroad the beams of enlightenment and certainty where the mists of doubt now mask the light.

Swiss Railway Electrification.

The Swiss Parliament has accepted a proposal to accelerate the programme of electrification of the Federal Railways, which will be completed in 1925, instead of 1930.

The electrification of the Swiss Federal Railways is making good progress, and, so far, 257 miles out of a total of 1,800 have been electrified. Electrically-driven trains are now running on the Isella–Brig–Sion line (Simplon), Berne–Thun, Chiasso–Lucerne (St. Gothard), Arth–Goldau–Zoug, Immensee–Rothkreuz, and Lucerne–Zurich lines. Work is steadily progressing on the Sion–Lausanne line, which will be ready at the end of this year; on the Lucerne Basel, Thalwil–Richterswil and Lausanne-Yverdon sections, which will be ready in the course of 1924; next year work is to begin on the Zurich–Berne and Geneva–Renens lines, which will be electrified in 1925, so that, at that time, nearly 503 miles will be equipped with electricity. Contracts for the construction of 104 electric engines will be placed next year, and at the end of 1924 the Federal Railways will be in possession of 174 electric and 983 steam engines, against 124 and 1,063 respectively in 1923. The Railways Board has decided also to purchase a certain number of oil-driven or Diesel engines in order to make trials on the secondary lines.

The electric engins, which are being constructed in the Brown and Boveri (Baden) and Secheron (Geneva) works, have so far given excellent results. The recent trials made on the St. Gothard line show that the fastest train covers the distance from Zurich to Chiasso —151 miles—in 4 hrs. 37 min., compared with 5 hrs. 19 min., when steam engines were used.

Up to the end of 1922 Switzerland has expended £8,800,000 on electrification, of which £3,560,000 was for rolling stock; in 1923 expenditure will amount to £2,600,000 including £760,000 for rolling stock; and £2,800,000 (£1,000,000 on rolling stock) will be expended before the end of 1925, a total of £17,760,000.

It is reported that a "Peasants' Lottery Loan" is to be floated by the Soviet Government in order to meet the present financial difficulties in Russia.

Malabar Tenancy Problem.

By S. Subbarama Aiyar, M.A.,

Senior Lecturer in Economics, Madras Christian College.

With most of the land concentrated in the hands of an extremely small group of landowners (Nambudiri Brahmins, Rajahs, Nair Taravads and Hindu Temples) whose estates are usually impartible, with a high pressure of population on the soil and with no great room for the expansion of cultivation, the monopoly power of the landlords in Malabar is extremely great and the problem of tenancy presents peculiar difficulties. Whether legislative interference in favour of the tenants is necessary is to be fought out in the Madras Legislative Council before long and as a disinterested account of the problem and offering a possible solution we welcome the pamphlet before us (*Malabar Tenancy Problem*, by P. Kodanda Rao, Member, Servants of India Society).

Cultivable land in Malabar is held under two important kinds of leases, *Verumpattam* or simple lease and *Kanom* or favourable lease. The *Verumpattam* tenant is a tenant-at-will with annual leases (other periods are also known), paying a rent mutually agreed upon between the landlord and the tenant (the customary rule being that one-third of the net produce is for the tenant and the rest for the *janmi* or landlord); in case of eviction the tenant is entitled to compensation for improvements made with the express or implied consent of the *janmi*. *Kañom*, whatever might have been its past, may be defined for the present as a usufructuary mortage of land for the term of 12 years (unless some other term is specified) by the conditions of which a definite share of the estimated produce is reserved for the mortgagee as interest on the money advanced and for the payment of the Government revenue and the balance is payable in the shape of rent to the mortgagor.

Mr. Kodanda Rao describes the rights and present demands of *Kanomdars* and *Verumpattamdars* and concludes, after a brief survey of the special economic and social considerations which necessitate State interference by means of legislation, that fixity of occupancy tenure and fair rents are to be guaranteed to *Verumpattamdars*, while the *Kanom* tenants (whom he regards as moneyed middle classes standing between the *janmi* and the *Verumpattamdar* or actual cultivator) do not deserve legislative protection. "The essence of the proposal," to quote from the pamphlet, "is that the actual cultivator should be left in undisturbed possession of the land he cultivates as long as he pays one-third of the net produce of the soil as rent to the landlords, exclusive of the assessment payable to Government."

From a strictly economic point of view, Mr. Kodanda Rao is right in insistinig that, as between the landlord and the tenant, a large part of control of the land should be vested in the actual cultivator who invests capital, hires labour, pays rent and takes the risk of cultivation and he is therefore justified in recommending that the right of permanent occupancy shall be the invariable incident of all leases (page 44). The landlord, on the other hand, cannot complain if he is guaranteed a "fair rent" and permitted to retain the right to resume the land under specific conditions, such as cultivation by himself or the extension of his buildings, on payment, of course, of adequate compensation for the improvements made by the current holder. In this way, Mr. Kodanda Rao hopes, "all *bona fide* cultivators, whether *Kanomdars*, *Verumpattamdars* or sub-tenants of either, whether they are small holders who themselves work the plough or the large holders who manage the cultivation of their lands by hired labour, all these get security of occupation" (page 44).

The proposal is no doubt simple, but the difficulty crops up in its practical application. The writer's assumption that the average *Kanomdar* is the moneyed speculator and middleman, and the *Verumpattamdar* is the actual cultivator is unfortunately not the whole truth. Nor is it easy, as a matter of practice, to measure in Agriculture, any more than in Manufactures, the respective returns of capital and labour. Many a *Verumpattamdar* of a big *janmi's* land is a rent-receiver and no more, while many a *Kanomdar* is an actual cultivator of the soil, while many among both invest capital and make improvements in land, though the different operations are left in the hands of cultivators to whom various kinds of help are rendered by their immediate landlords. The fact is in Malabar the distinction between *Kanom* and *Verumpattam* is one that is usually attached to the soil and has little or

no reference to the status or wealth of the *Kudiyan* (tenant). Moreover it is not at all a very difficult matter for a superior landowner, especially for the so-called middle class rent-receiver to show that the actual cultivator, "the man who works the plough," is only a co-partner in the enterprize along with him. The prohibition of co-partnership (a course which Mr. Rao suggests to avoid this danger) is fraught with danger to cultivation and penalizes the middle class investor in the supposed interests of the worker.

Having shown that ownership and *Janmam* rights are concentrated in a few hands, who by the very largeness of the size of their property can only be rent-receivers and that competition has swept away custom and sentiment which used to favour tenants, the remedy must seek not to revolutionize the land system in Malabar but to obviate the evils of competition, concentration and absentee landlordism. Concentration and absentee landlordism are more in evidence in *Janmam* than *Kanom* holdings and the *Kanomdar*, as he is accustomed either by prescriptive rights or otherwise to exercise certain rights of ownership and bargains, as a rule, at the time of *charth* (drawing up the lease) for fixity of tenure, is entitled to receive legislative protection.

No doubt *Kanom* is tending to disappear in some cases (chiefly due to the fear that legislative interference will prejudice the *janmis'* interests), but it is not likely to die out altogether (nor is the *janmi* wise in letting it perish) because the landlord can be certain of his income from the so-called middle class investors than from resourceless cultivators or "the men who work the plough", and be free from the worries and uncertainties of annual leases. The most formidable engine of oppression by the landowners and their unscrupulous agents is the threat of *melcharth* (leasing land to another) during the course of the twelve-year period ; and another complaint is the unreasonable demand of money and perquisites at the time of renewal. Public opinion in Malabar (including that of the *janmi*) condemns these practices. Dewan Bahadur Mr. Krishnan Nair's Bill which was recently introduced in the Madras Legislative Council (a copy of which is included in the pamphlet) seeks to set right these abuses by settling the *janmis'* demand on an equitable basis,offering fixity of tenure to *Kanom* tenants on certain conditions and dispensing altogether with the right of *melcharth*.

I sympathize with the proposal of Mr. Rao to grant fixity of occupancy to the *Verumpattamdar* as well, but it seems to me that for the present the moderate proposals contained in Chapter III of Mr. Krishnan Nair's Bill, with perhaps a few modifications or additions, indicate the line of least resistance. The merit in Mr. Nair's Bill is that it simply seeks to register healthy public opinion and perpetuate a healthy custom that has come down through generations, instead of revolutionizing present ideas whatever theoretical merits such ideas may possess.

There is another novel idea in the pamphlet. After suggesting that land is probably underassessed in Malabar and hoping that in the fresh settlement operations now in progress a more correct estimate will be made of the net produce and thereby considerably increase the public revenue (p. 21), Mr. Rao is of opinion that the Government should explore the possibility of sharing the unearned increment once in 15, instead of as at present, 30 years. It is well known that in Malabar, the actual incidence of revenue falls on the tenant whether he is a *Kanomdar* or *Verumpattamdar*. The *janmi* stipulates in all deeds that the tenant is to pay the present Government revenue as well as any future increase of revenue or cesses that the State or local bodies may impose and bear all expenses connected with the Survey and Settlement operations. Secondly, the State machinery is too formal and "wooden" and the principles of assessment are too much based on statistical manipulation of prices and cultivation that each settlement operation will disturb the whole arrangement and give room for considerable higgling and excitement which are extremely unwelcome to the *janmi* and tenant alike.

Among other minor proposals we find that Mr. Rao suggests that the tenants shall have the right to have the rents in kind commuted into money and that provision must be made to consolidate holdings into "economic" units and prohibit sub-division thereof. It is better that the question of commutation is left to mutual contract. The problem of creating 'economic holdings' by law is by no means free from controversy.

During the first quarter of the current economic year, Russia exported more than seven million puds of naphtha products, which was an increase of 53% on the exports of the corresponding period in the last economic year. It is anticipated that 54 million puds will be exported by the end of September

Co-operation in Japan.

The 18th Congress of Co-operative Societies, held in April 1922, passed a resolution declaring that the establishment of a central credit institution was absolutely necessary for the development of co-operative societies in Japan, and decided that the Government should be asked to bring in a bill during the course of the next Session of Parliament for the establishment of such an institution.

On 10th February 1923, the *Seiyu Kai*, the strongest of the political parties in Japan, introduced in the House of Representatives a bill to establish a central credit institute for co-operative societies. This bill was passed, with certain ammendments, by both Houses of Parliament and was promulgated as an Act in the Official Gazette of 6th April 1923.

The main provisions of the Act are as follows :—

1. The Central Credit Institute for Co-operative Societies shall be established as an incorporated institution with headquarters at Tokyo.

2. Its funds shall amount to 30 million yen, to be constituted by the issue of 300,000 shares of 100 yen each. No person shall be entitled to hold shares, other than the Government and co-operative societies or unions of co-operative societies. The Government shall contribute a sum of 15 million yen, of which 5 million yen shall be paid within a year of the establishment of the Institute.

3. The main functions of the Institute will be to advance loans to unions of co-operative societies or to individual societies which are members of the Institute (no security being demanded, but repayment to be made by regular instalments), to discount bills, undertake exchange business, etc., for such societies, and to hold deposits of unions of co-operative societies, co-operative societies, public bodies or any other incorporated bodies established with aims other than that of making profits. The Central Credit Institute will also be entitled, under certain conditions, to issue bonds within the limit of an amount equivalent to ten times the amount of the contributions actually paid in.

4. The officials of the Central Credit Institute will be nominated by the competent Minister. In addition, a council of twenty persons will be set up, which will be consulted on important matters affecting the management of the Institute. The members of this council will be nominated by the competent Minister and more than half of them are to be persons connected with the co-operative movement. The management and the functioning of the Institute are placed under the supervision of the Ministers concerned. The Central Credit Institute is exempted, for a period of 15 years from the time of its establishment, from the payment of dividends on that portion of its shares contributed by the Government.

The number of co-operative societies is at present about 14,000, with a membership of about 3,500,000. The majority (12,000) of these are solely or partly credit societies. The sums held by these credit societies as deposits amount to about 250 million yen, and the amount of money advanced by them to 200 million yen. These figures indicate the urgent need for a central financial organization.

The actual institution of the Central Credit Institute is now being considered, and it is expected that it will come into existence during the present month.

The Establishment of a National Union of Purchase Societies.

The Central Union of Co-operative Societies has finally succeeded in its efforts to establish a national union of purchase societies, the inaugural meeting of a national union being held at Tokyo on 19th April.

The principal office of the Union will be at Tokyo and branch offices will be established at Osaka and other places. Membership will be open to co-operative purchasing societies or unions of such societies. The Union will purchase or produce for the member societies the goods required by them.

At present, there are about ten thousand co-operative societies which are solely or partly purchase societies and over a hundred unions of such societies. It is obviously not to the interest of these societies to be obliged to purchase the goods required by their members from the ordinary merchants or manufacturers, as has been done up to the present. The need for the establishment of a national union of these purchase societies which will undertake the manufacture or the wholesale purchase of such goods has been increasingly felt.

The creation of the Central Credit Institute and the establishment of the National Union of Purchase Societies is regarded as opening

up a new phase in the activities of co-operative societies.

Development of Consumers' Co-operative Societies.

As already stated there are a considerable number of co-operative societies and societies which are solely or partly purchase societies, but these purchase societies mainly deal with the purchase and sale of agricultural implements and materials for the agricultural population. Thus according to investigations made by the Department of Agriculture and Commerce, at the end of the year 1921 there were only 90 co-operative societies, with a membership of 42,668, which could be strictly regarded as ordinary consumers' co-operative societies, and the more developed examples of these societies were only to be found in large cities such as Tokyo and Osaka. Investigations made by the same Department also show that in the year 1920 there were, in and near the city of Tokyo, 33 consumers' co-operative societies with 26,881 members and contributions to the amount of 476,332 yen paid up, and in and near the city of Osaka 18 societies with a membership of 13,000 and 182,000 yen paid up.

Since the time of these investigations, however, a certain development has been noticed in the consumers' co-operative movement, both at Tokyo and at Osaka. At Tokyo, by the end of the year 1922, a scheme had been carried out to establish a Union of Consumers' Co-operative Societies in the Tokyo prefecture. Thirty-six societies with 31,200 members were affiliated to this Union at its start. In Osaka, by the end of September 1922 there were 17 consumers' co-operative societies—10 in the city and 7 in the neighbourhood—and of these 17 societies 4 were maintained chiefly by the working classes. On 11th February 1923 a new consumers' purchase society for the working classes was established in Osaka, with a membership of 12,000.

It has long been regretted that the development of urban consumers' co-operative societies in Japan has made so little progress and the Department of Agriculture and Commerce recently called a meeting of the representatives of consumers' co-operative societies of various cities to enquire into the causes which hindered their development. The main causes were considered to be: (*a*) insufficient funds; (*b*) lack of support from the members of co-operative societies, who often bought from ordinary retailers articles which they could obtain from their co-operatives; (*c*) absence of a fixed subscription. Members are asked to contribute according to what they can afford and accordingly those who have contributed a large sum are liable to obtain a greater influence in the management of the society and to misuse the society for their own private interest.

It is reported that since this meeting the Department of Agriculture and Commerce has decided to set up a commission to investigate the causes of the inactivity of the co-operative societies, and to consider measures to be taken to encourage the movement. The commission will be composed of representatives of co-operative societies, representatives of the Government departments concerned, and well-known business men.

Congress of Co-operative Societies.

This year's congress of co-operative societies was held on 25th and 26th April in the city of Sendai under the chairmanship of Mr. Shimura, the President of the Central Union of Co-operative Societies. A resolution was passed declaring it to be "lamentable that at such a critical time, when the economic competition between nations is becoming keener as it has been doing since the great war, the productive efficiency of the Japanese Empire should be decreasing year by year". The co-operative societies, the resolution stated, should take up the difficult task of restoring the economic activity of the Empire.

Paper-makers' By-products.

At a meeting of the shareholders of Messrs. William Todd Junior and Co., Limited, Springfield Paper Mills, Polton, in Edinburgh—a report was submitted on the experiments which have been brought to a successful issue, and which have resulted in a process being perfected for making from various waste products of the mill a material which can be used instead of vulcanite or ebonite, and which in some ways superior to them for electrical work. The Chairman quoted some extracts from a report by Professor Baily, who stated that the mechanical strength of Indurite, the new material which it was proposed to manufacture, was very high, and much better than ebonite or vulcanite, and it would withstand without change a temperature at which vulcanite or ebonite got quite soft.

Indian Taxation Committee.

A *Gazette of India Extraordinary* publishes the text of a Government of India resolution appointing the Indian Taxation Committee and announcing the personnel and terms of reference.

The resolution says that the question of instituting a scientific inquiry into the system of Indian taxation has recently attracted considerable attention in the country and has been discussed on more than one occasion in the Indian legislature. The Government of India are now in a position to announce that arrangements have been made for such an inquiry.

The motive for the appointments is not any need for meeting additional expenditure or any intention to increase the total amount raised by taxation in India. The necessity for the inquiry arises largely from the effect produced by the war on the general level of prices and of expenditure, and consequently on the incidence of taxation in its existing forms. The problems arising therefrom are common to many countries, but in India the changes which have been made since the war in the relations between the Central and the Provincial Governments and the development of self-government furnish special reasons for the study of the subject of taxation in general and for an examination of alternative sources from which to raise money to meet the expenditure which is necessary to be incurred by the various taxing authorities at the present time.

Two Important Reasons.

The increasing pressure for a more drastic regulation of the liquor traffic in particular makes (necessary) (?) the study of alternative sources of taxation. The system of taxation which may be expected to result from the action taken on the recommendations of the Indian Fiscal Commission and the Tariff Board, will disturb the distribution and affect the real burden of taxation borne by the people of India.

The intention of the Government of India to institute this enquiry was announced in the Council of State on 4th February, 1924, when the proposal was discussed in some detail. Reasons were then given for the opinion of the Government of India that the terms of reference should be comprehensive and that the enquiry should be conducted by a small Committee equally representative of European and Indian experience and including an officer with wide knowledge of Indian administration, and Indian representative of acknowledged authority in economic questions and an expert on taxation from abroad. Sir Charles Todhunter, K.C.S.I., I.C.S., till recently the Finance Member of the Executive Council of the Governor of Madras, has agreed to act as the Chairman of the Committee. The Government of India have also been able to secure the services of Sir Percy Thompson, K.B.E., Deputy Chairman of the Board of Inland Revenue in England. The following gentlemen have also consented to serve on the Committee :—Sir Bijay Chand Mahatab, G.C.I.E., K.C.S.I., I.O.M., Maharajadhiraja Bahadur of Burdwan, and Dr. R. P. Paranjpye, Professor of Fergusson College, Poona. Mr. W. B. Brett, I.C.S., will act as Secretary.

Terms of Reference.

The following are the terms of reference to the Committee :—

(1) To examine the manner in which the burden of taxation is distributed at present between the different classes of the population.

(2) To consider whether the whole scheme of taxation, central, provincial and local, is equitable and in accordance with economic principles, and if not, in what respects it is defective.

(3) To report on the suitability of alternative sources of taxation.

(4) To advise as to the machinery required for the imposition, assessment and collection of taxes, old and new.

(5) To prepare rough estimates of the Financial effects of the proposals.

(6) To include in the inquiry consideration of the Land Revenue only so far as is necessary for a comprehensive survey of the existing conditions.

The terms of reference have been formally accepted by all the Provincial Governments without prejudice to their claims in regard to distribution on the total revenues.

No Concern with Expenditure.

It will be observed that the Committee will have no concern with expenditure, nor will it be part of their function to examine the adequacy of the resources of the different governing bodies. Their concern will be primarily with the burden imposed on classes

of the population without regard to territorial limits. The estimate they will frame will be designed to illustrate the methods of easing the burden where it is too heavy and of increasing it where it is too light. They will indicate theoretically the correct distribution of taxes between the Imperial, Provincial and Local authorities and the most efficient machinery for collection, whether it follows the same lines of division or not.

It will thus be no part of the duties of the Committee to consider the equity of the Meston Award. Similarly as regards Land Revenue, the Committee will not be required to make suggestions regarding the system of settlement, but it will be within the scope of the enquiry to study the incidence of the Land Revenue (including water rates) and to point out any defects from the point of view of the canons of taxation of any difficulties in the readjustment of the burden of taxation. It will be with the terms of reference of the Committee to institute such an enquiry into the economic conditions of the people as the Committee may consider necessary for its purpose, and to report on the adequcay of the material already available making suggestions as to the best manner in which it may be supplemented and the most suitable agency for a wider economic enquiry.

Enquiry to Take a Year.

A resolution on the subject of a wider enquiry into the economic condition of the people of India was in fact moved by the Hon. Mr. Phiroze C. Sethna in the Council of State on 4th February 1924, and adopted in the following form: "That this Council recommends to the Governor-General-in-Council that Local Governments may be consulted with regard to the desirability of undertaking an enquiry into the general economic conditions of British India, and whether they are prepared to support a proposal to appoint a Committee and to co-operate in its labours if appointed." The Government of India consider that the present enquiry is likely to provide material of much value for any enquiry which may subsequently be made into the wider aspect of the Indian economic position.

The Government of India have discussed the preliminaries with the Chairman who has now left India on leave with the object of getting as full information as possible of the system of taxation in European countries. He is, with the concurrence of the Government of India, visiting Geneva to study European and other taxation systems with the assistance of the Secretariat of the League of Nations. It is proposed that the Committee should assemble in India about the last week of October, and in the meantime, preliminary statistical material is being collected with the assistance of the Provincial Governments for the use of the Committee. The Government of India hope that the enquiry may be completed within a year. The Committee will report to the Government of India, who, in consultation with the Provincial Governments, will consider the further action necessary. Opportunity will then be taken to have a full consultation with the representatives of public opinion and the Legislature before any action is taken.

Algebra by Machinery Printing Without Type.

A calculating machine that can compute algebraically and a printing machine that dispenses with type, electrotypes and halftones, and instead of printing from a design which carries the ink, prints more rapidly and better from a pattern which never comes in contact with the ink, have been perfected during the past year by inventors working with the Research Corporation. An even more astonishing discovery is soon expected for the inventor who can produce a new metal with the strength of steel, non-corrosive, lighter in weight is said to be already on the horizon. "We are on the threshold of an era of changes in the great field of Metallurgy," the Research Corporation states. "Steel has ruled king of industry. Its position is being threatened by those who have been pioneering in the fields of the alloys."

The Research Corporation itself was established twelve years ago by the Smithsonian Institution of Washington to serve as a connecting link between inventors, manufacturers, and the Government and to conserve American inventive genius. In return for the encouragement it gives to inventors and the help afforded in introducing their patents, the Corporation receives a share of the royalties on these patents. From the revenues so collected from inventions successfully commercialized, other inventors are helped to get a hearing from the industries that can utilize their inventions.

Joint Stock Enterprize in India.

During March 1924, 38 companies were registered with an authorized capital of Rs. 2,33 lakhs, to which the Punjab contributed Rs. 1,16 lakhs, or 49 per cent, and Bengal Rs. 36 lakhs, or 15 per cent, of the total. In the corresponding month of the preceding year, *i.e.*, in March 1923, 37 companies were registered with an authorized capital of Rs. 2,43 lakhs. The largest flotation was Oriental Carpet Manufacturers (India) with an authorized capital of Rs. 1,00 lakhs in the Punjab. For the twelve months, April 1923, to March 1924, the number of companies registered was 430 with an authorized capital of Rs. 25 crores, as against 489 companies with Rs. 30 crores of authorized capital in the preceding year. The following statement showes the trend of registration in recent years :—

Year	Number of Companies	Index Number (pre-war year-100)	Aggregate authorized Capital	Index Number (pre-war year-100)	Average authorized Capitalper Company
1913-14 (pre-war)	356	100	66,91,53,000	100	18,79,000
1918-19 ..	290	81	21,27,55,000	32	7,34,000
1919-20 ..	948	266	2,81,76,12,000	421	29,72,000
1920-21 ..	1,039	292	1,48,03,70,000	221	14,24,000
1921-22 ..	720	202	79,79,64,000	119	11,08,000
1922-23 ..	489	137	29,80,96,000	44	6,09,000
1923-24 ..	430	121	24,94,78,000	37	5,80,000

In the year 1923–24, the number of companies registered decreased by 12 per cent, and the authorized capital by 16 per cent, as compared with 1922–23. The noticeable decreases were under Cotton mills (—Rs. 1,88 lakhs); Clay, Stone, Cement, Lime and other Building and Constructing materials (—Rs.1,79 lakhs); Coal, Mining (—Rs. 137 lakhs); Agencies (including Managing Agent Companies) (—Rs. 1,13 lakhs); Life, Fire and Marine Insurance (—Rs. 73 lakhs); and Chemicals and Allied Trades (—Rs. 56 lakhs).

There were considerable increases also in the authorized capital invested in Public Service Companies (—Rs. 3,88 lakhs), Mills for wool, silk and hemp, etc. (—Rs. 1.01 lakhs), and Tea planting companies (—Rs. 54 lakhs).

Thirty-eight companies, limited by shares, with authorized capital of Rs. 4,54 lakhs, having ceased work, went into liquidation or were finally dissolved during the month of March '24, and 365 companies with authorized capital of Rs. 40,55 lakhs during the year 1923–24.

Import Duty on Sulphur.

The Indian Tariff Board, in a report iust issued, recommend that the import duty on all kinds of sulphur should be removed in the interests of the chemical industry and the manufacture of fertilizers, as well as of other industries.

The Report states :—

In all, nine representations were received by the Board on the subject of the removal of the duty on sulphur. Four were from firms engaged in the manufacture of chemicals, and three from firms which manufacture sulphuric acid in order to produce sulphate of ammonia as part of the coke by-product recovery process. The other two were submitted by the Indian Metallurgical Association and the Indian Tea Association. All the representatives, except the last, desired the abolition of the duty because of the industrial importance of sulphuric acid, for which sulphur is the essential raw material. The Indian Tea Association, on the other hand, pointed out that sulphur (in the form of "flowers of sulphur") was used extensively by the tea industry in the preparation of insecticides. We were not asked to consider any industrial use of sulphur except as a constituent of insecticides and of sulphuric acid.

Sulphur not produced in India.

Sulphur is not produced on a commercial scale in India at present, and apparently there is little prospect of such production in the near future. The only workable deposits of which we have heard are at Sanni in Baluchistan, and owing to their great distance from the industrial centres, the railway freight on transport would be heavy. Nor does India possess workable deposits of sulphur ores, such as pyrites, which are freely used in other countries. It is true that a few years ago the Burma Corporation and the Tata Iron and Steel Company were interested in a scheme for the manufacture at Jamshedpur of sulphuric acid from zinc concentrates brought from the Corporation's mines in Burma. A large amount of money was spent on the scheme, but it was eventually abandoned. We are satisfied that there is no domestic production which would be prejudiced by the removal of the import duty.

Imported Sulphur.

The whole of the sulphur used in India is imported from abroad, and, in consequence of

the freight charges and the import duty, the Indian manufacturer of sulphuric acid is at a disadvantage. The Indian Metallurgical Association has supplied us with the following figures for the average cost to consumers of sulphur in India as compared with England and America :—

America	..	Rs. 40 to Rs. 50 per ton.
England	..	Rs. 60 to Rs. 70 ,,
India	..	Rs. 115 to Rs. 125 ,,

The c.i.f. cost of sulphur in India is from Rs. 90 to Rs. 100 a ton ; landing and other charges amount to Rs. 6 a ton, and the present duty (15 per cent on a tariff valuation of Rs. 100 per ton) is Rs. 15. In 1923 the valuation was Rs. 120, and the duty was therefore higher by Rs. 3. The removal of the duty would bring down the average cost to consumers at the ports to about Rs. 100 per ton. India would still be at a disadvantage as compared with other countries, but she would be substantially better off than she is at present.

Industrial Uses of Sulphuric Acid.

Sulphuric acid is of industrial importance in many ways. It is used for the manufacture of fertilizers such as superphosphates and sulphate of ammonia, and for the manufacture of other chemicals such as nitric and hydrochloric acids, Epsom salts and aluminium sulphate. In certain branches of the steel industry (*e.g.*, tinplate and wire) sulphuric acid is indispensable for picking the metal, that is, for removing scale from its surface. It is also used in electric accumulators, in the manufacture of mineral waters, in refining mineral oils, and in the manufacture of dyestuffs and explosives. Cheap sulphuric acid is of importance, directly or indirectly, to very many industries, and it is for this reason, no doubt, that the production of sulphuric acid in a country is sometimes spoken of as an index or barometer of its industrial prosperity.

Artificial Fertilizers.

The small use which has hitherto been made of artificial manures, which are needed to maintain or restore the fertility of the soil, has long been a reproach to Indian agriculture. In all provinces the Agricultural Departments of Government are anxious to stimulate and extend the use of fertilizers by the cultivator, and under the present tariff such fertilizers are admitted free of duty. Cheaper sulphuric acid would do something to promote the manufacture of chemical manures in India and, by lowering their price, make it possible for the *raiyat* to buy them. In this branch of manufacture, the fertilizer which is produced on the largest scale in India is sulphate of ammonia. This is produced in by-product recovery plants (both in the coalfields and at Jamshedpur) by bubbling the waste gases from the coke ovens, after the tar has been extracted from them, through sulphuric acid. Sulphate of ammonia is thereby precipitated in the form of a white powder. It is unfortunate that only a small proportion of India's production of this valuable chemical manure is consumed in the country. The bulk of it is exported to Java and Mauritius for use in the sugar plantations, and to Ceylon. In these markets the Indian product has, of course, to compete with fertilizers imported from other countries, and the question of price is all important if India is to hold its own. A reduction in the cost of manufacture of sulphate of ammonia would also be beneficial in another direction. Since it is a by-product produced in the manufacture of coke, any profits that are made are taken in reduction of the cost of producing coke, and thence ultimately of pig iron and steel.

The Chemical Industry.

The witnesses who gave evidence before us stated that the bulk of the sulphuric acid used in India was manufactured in the country, and the removal of the duty on sulphur is therefore important, not because the Indian manufacture of sulphuric acid cannot hold its own, but because cheaper sulphuric acid is indispensable to the establishment of other industries and particularly of the chemical industry. Oral evidence was given at Bombay by representatives of two companies engaged in the manufacture of chemicals. They expressed the desire to put before us proposals for an increase in the import duties on imported chemicals, but with these we were unable to deal, as the question had not been referred to us by the Government of India. The evidence made it clear, however, that chemicals are now being imported into India at very low prices and that the growth of the industry in the face of foreign competition will be difficult. The removal of the duty on sulphur would do something to cheapen the cost of producing chemicals in India, and it is very desirable that help should be given in this form.

Benefit to the Indian Manufacturer of the Removal of the Duty on Sulphur.

We were not successful in obtaining exact information as to the reduction in the cost of various chemical products likely to result from the removal of the duty on sulphur. The calculations are somewhat intricate, and the representatives of the Companies were not agreed

as to the quantities of sulphuric acid used in the production of certain chemicals and were, moreover, unwilling to disclose their manufacturing costs. But in the case of sulphate of ammonia, the evidence Mr. E. L. Watson gave on behalf of the Indian Metallurgical Association enables us to give the figures. Approximately one ton of sulphur is required to make 3.5 tons of 77 per cent sulphuric, or 2.7 tons of pure, undiluted acid. The import duty of Rs. 15 a ton on sulphur therefore raises the cost of undiluted sulphuric acid by Rs. 5.5 a ton and the cost of the 77 per cent acid by Rs. 4.3. According to the details given by Mr. Watson, the latter figure is from 6 to 7.3 per cent of the cost of 77 per cent acid. A ton of sulphate of ammonia contains three-quarters of a ton of undiluted sulphuric acid. The import duty on sulphur, therefore, means an addition of Rs. 4.1 to the cost of one ton of sulphate of ammonia. This is less than 2 per cent of the market price of the fertilizer, and probably not much more than 2 per cent of the cost of production. It may, however, mean a substantial sum to the manufacturer. The Tata Iron and Steel Company will require approximately 4,600 tons of sulphur annually, and the duty they would pay on this quantity is about Rs, 69,000.

FINANCIAL EFFECT OF REMOVAL OF DUTY.

The imports of sulphur into India during recent years are given in the following table :—

	Tons.
Average of the 3 years, 1911-12 to 1913–14...	5,674
1920–21	10,592
1921–22	6,277
1922–23	9,026
1923–24 (ten months' figures multiplied by 6/5)	12,067

If the imports be taken at 12,000 tons, the sacrifice of revenue involved in removing the duty is a little over Rs. 1.8 lakhs.

RECOMMENDATIONS.

We recommend that the present import duty of Rs. 15 a ton on sulphur be removed, and that henceforward sulphur be admitted free of duty. The reasons in favour of this proposal are, we think, strong. Sulphur is not produced in India and is not likely to be produced and no domestic interest will therefore be prejudiced. On the other hand, the removal of the duty will be of substantial benefit to the chemical industry and the manufacture of fertilizers as well as to other industries.

The present duty of Rs. 15 a ton is applicable to what is known as "rough sulphur". Sulphur is also imported in two other forms known as "flowers of sulphur" and "roll sulphur" and the tariff valuation of these forms are Rs. 120 and Rs. 140 a ton respectively, the duties being Rs. 18 and Rs. 21 a ton. It is "rough sulphur" which is used for the manufacture of sulphuric acid and the bulk of the imports are in this form. "Flowers of sulphur" are used chiefly for medicinal preparations and for insecticides and it is on account of the latter use that the Indian Tea Association has asked that this form also should freed from duty. Their estimate is that the tea industry is now paying on account of import duty on sulphur a sum considerably in excess of Rs. 25,000 a year. Regarding the uses to which "roll sulphur" is put we have no information. It is the removal of the duty on "rough sulphur" that is the important matter, but since the removal of duty on "flowers of sulphur" would benefit the tea industry and the imports of the third form are apparently small, we do not think it is advisable to discriminate. We, therefore, recommend that the import duty on all kinds of sulphur should be removed.

An important machinery unit in a factory broke down. The operator and the foreman both tried in vain to diagnose the trouble. The plant engineer had no better success. An expert was called in. He looked at the machine for a minute or so, then tapped it several times with a hammer and told the operator to start it. It ran perfectly and kept running. When the bill came in for the expert's services, it totalled 250 dollars. The shop superintendent grumbled. The price was ridiculous, he said and asked for an itemized statement. The expert itemized it thus :

Tapping with hammer .. 1 dollar.
Knowing where to tap .. 249 dollars.

The first paper mill of the Dutch Indies was recently built at Padalarang for an annual production of 3,000 metric tons of paper, without wood, for printing and the Record Office. Packing paper will also be made from the waste records paper which the Local Government supplies in large quantities. Rice straw and waste agave and manilla fibres will be utilized as raw materials. Other local plants, rietampas, serehn, alang-alang, etc., are to be tested. Native kaolin and rosin had already been subjected to experiment. It is said that this production will suffice for the actual needs of the Local Government and other consumers.—*Industria Della Carta.*

Education in the U. P.

The report of the Director of Public Instruction dealing with the period 1st April, 1922 to 31st March, 1923, is a record of useful work done under embarrassing financial conditions. While the total number of pupils in institutions of all kinds is 10,80,951, being an increase of over 50,000 above the figures of last year, the percentage of scholars to total population is only 2·38. It is, therefore, clear that much ground has to be covered before the goal of even moderate literacy can be reached. Education is now largely a matter of finance. Government are spending from provincial revenues Rs. 1,65,87,000 on education, being 57 per cent of the total expenditure from all sources. There has been some criticism that this large expenditure is not altogether fruitful ; that, especially in the field of primary education, there is a waste of public funds, inasmuch as a large proportion of the pupils leave school before they reach a stage when instruction can produce any permanent result. The U. P. Government state that they will closely examine these criticisms, but it must be recognized that no measure of administrative reform can ignore the fact that effective advance is only possible through largely increased expenditure to which local and private bodies must contribute in adequate proportions. The Director rightly draws attention to the slackening of effort on the part of aided institutions to do their fair share in raising funds.

The Government recognizes the paramount importance of a sound and widespread system of education leading from the primary stage to the secondary and on to the University ; he considers that a forward educational policy will in the end be the truest possible national economy. But the rate of progress will depend on the extent to which the financial burden is divided between the Government and the people.

The working of the re-constituted University of Allahabad has been widely criticized. It has been said that the attempt to combine the internal or teaching side of the University with the external or affiliating side has been fruitful of delay and discord. There is a growing body of opinion both in the University itself and outside that it would be to the interest both of the teaching University and of its Associated Colleges to sever the connection and to re-constitute the external side as a new University at Agra. A resolution to this effect was carried in the Legislative Council in February, 1923, and the proposal was again brought forward during the January Session of the present Council. Government are appointing a committee to deal with this important question. Another problem concerning University education which has been prominently before Government is, how to ensure the proper expenditure of public funds without restricting unduly the freedom of the two provincial Universities of Lucknow and Allahabad. The major portion of the expenditure of these two Universities is met from provincial revenues, and Government as the guardian of the public funds must see that the Universities are not allowed to incur financial liabilities that may put an undue strain on the resources of the province. It is, however, recognized that financial control should not be made an instrument of undue interference in the academic affairs of the University. The U. P. Government hope to arrive at a satisfactory solution of this difficult question with the assistance and co-operation of the Universities concerned.

The United Provinces Intermediate Education Act of 1921 was brought into force with effect from the 1st April, 1922, and the duty of regulating and supervising the system of High School and Intermediate Education was transferred to a Board of High School and Intermediate Education. The Board is a thoroughly representative body and has done a great deal of useful work in the first year of its working, under the able guidance of the Director, who is its ex-officio Chairman, and its Secretary, Rai Bahadur Babu Abhaya Charan Mukerji. The number of Intermediate Colleges has increased during the year from three to twelve. There are now fourteen Intermediate Colleges (eight Government, five aided, and one unaided). An estimate made by the Director shows that the ultimate additional recurring expenditure of converting a Government High School into an Intermediate College is about Rs. 25,000 per annum and the corresponding cost to Government of converting an aided High School is Rs. 11,000. It is not surprising that in times of financial stress a measure of educational reform that requires for its fulfilment large future commitments should not go unchallenged. The internal organization of Intermediate Colleges has also been criticized on educational grounds. It is said ;—

(1) That the teaching of Science in these Colleges is unsatisfactory owing to the lack of well-equipped laboratories and properly qualified teachers ;

(2) That the combination of junior classes with higher classes in the same institution is open to objection on grounds of morality and raises administrative difficulties ;

(3) That there is danger of the neglect of the lower and middle sections owing to the tendency of Principals to concentrate attention on the senior classes.

The U. P. Government will, we are told, in consultation with the Director of Public Instruction, examine these criticisms, but the Government appear convinced that there should be no hasty or ill-considered tampering with the policy underlying the Intermediate Education Act, whereby High School and Intermediate Education has been separated from the purview of the University and made over to a Representative Board.

Vernacular middle schools show a satisfactory increase in enrolment. Inspectors of Schools have borne repeated testimony to the good work done in these schools. Their chief need is the provision of more hostels. The teaching of English in these schools as an optional subject is receiving increasing attention, but the number of schools offering the subject is still small. Another important reform connected with these schools is the proposal to start agricultural middle schools in order to give boys of the agricultural classes an education based on agriculture. Government will watch with interest the success of this measure.

In regard to Primary Education, the main feature during the year under report was the introduction in eight municipalities of compulsory education for boys between the ages of six and eleven. Here too the problem is the same as in rural areas, namely to keep boys at school till they have completed the full primary course. The Director again draws attention to the lack of proper supervision in municipal schools and to the unsatisfactory state of their school buildings. The U. P. Government hope that the Boards will take steps to put these matters right. It is satisfactory to note that the percentage of trained teachers in district board schools is improving rapidly and that in some places the supply has overtaken the demand. The urgent need of providing school buildings is again emphasized in the report. This is a matter which along with others must wait till the financial position improves.

Adequate facilities for training teachers in all grades are now provided and owing to the good prospects now open to teachers a better class of recruit is entering the profession of teaching.

There has been an increase in enrolment in public institutions but the precentage of scholars to population, namely ·47, is still deplorably low. The Director points to the lack of public interest, the absence of qualified and suitable teachers, and the want of funds as the main causes which continue to hamper expansion. But there are encouraging signs that the old apathy is disappearing and that people are beginnig to realize the vital impotrance of this branch of education.

European schools show good progress, as revealed by the results of the Cambridge Examinations. A useful piece of administrative work accomplished during the year was the revision of the Code of Regulations for these schools. It is satisfactory to note that the number of scholars in Islamia schools and Maktabs has increased by over 4,000 and that the total number of Muhammadan scholars reading in secondary and primary schools has risen from 1,47,735 to 1,55,928. But the percentage of increase of Muhammadan pupils, namely 3·4, compares unfavourably with the increase among Hindus, which is 5·3. It is gratifying to note that the Boy Scout Movement is becomimg increasingly popular and is being extended to vernacular schools. Good progress has also been made in the provision of schools for the depressed classes. Scholarships are now provided for boys of these classes to enable them to proceed to the middle vernacular course. It is hoped in this way to increase the number of qualified teachers for such schools. The experiment of strating night schools outside municipal areas has so far not met with much success. But good progress has been made in the six municipalities which have opened these schools and there is reason to hope that with greater interest on the part of Boards and with closer supervision the scheme should prosper. It meets a distinct need in providing education for illiterate adults. The system of medical inspection of English schools has been revised, but owing to lack of funds, the U.P. Government have not been able to do as much as the importance of the subject demands. The physique of boys, especially in English schools, leaves much to be desired in spite of the increasing interest taken in games and physical exercises. The Government hope to take measures for putting the medical inspection of students on a sound footing as soon as funds are available.

British Empire Exhibition.

London.—After months of anticipation, the 100 million dollar British Empire Exhibition at Wembley, near London, is open, and proved a success. To a world so sophisticated that it judges of any scheme by the figures associated with it, 100 million dollars will mean a great deal. But the figure will not convey to people who do not see Wembley any idea of the immensity of this "Empire's Shop Window".

When it is remembered that the British Empire embraces forty or fifty different in colour, tongue and social order, it can be imagined how interesting a miniature Empire Wembley has been made. Tremendous ferro-concrete buildings, the largest in the world—so large that they expand and contract several inches, according to the mood of the temperature—the Stadium, in which 110,000 people saw the King open the Exhibition, and grounds covering an area of 250 acres—have given plenty of scope for this far-flung Empire to come home in its ships and show the Old World what has been achieved in the New.

There are points where the American spirit is in sympathy with the spirit of Canada, Australia, Africa and New Zealand. These countries, in the same way as America, have been settled and made by British people who, still loyal to the traditions of the Old Country, set out to till new soil and carry the traditions of English husbandry across the seas.

The Empire Exhibition, towards which the eyes of the world are turned, is a gigantic and successful effort to prove to the world, that even through the tragedy of her war, and the strain that came after, Great Britain and her Dominions have grown, in fact and in vision, making the greatest Empire of them all.

10,000 Voices.

The largest chorus in the world is an attraction at the British Empire Exhibition. It embraces one hundred choral societies of Greater London—from Reigate in the south to Finchley in the north, and from Barking in the east, to leading Teddington in the west. There are no less than ten thousand trained voices in the choir. To these are added an orchestra of five hundred instrumentalists and a gigantic concert organ, weighing thirty tons. Some of the great metal speaking pipes are twenty-six feet high. This wonderful aggregation will be at the Stadium on the following days: Saturday, May 31st, at 2–30 p.m.: the Empire Concert; Saturday, June 14th, at 3 p.m.: Handel Day; Saturday, June 28th, at 6 p.m.: Miscellaneous Concert; Saturday, July 12th, at 3 p.m.: Selection Concert; August 9th, at 3 p.m.: British Composers' Day. These great concerts can be heard for one shilling, and there is accommodation in the Stadium for 110,000 people. The conductor, Dr. Charles Harris, says his concerts are "of the people, for the people, by the people". No such musical event has ever been attempted before in the history of the world, and it is the first time in England that the great musical festival choruses have combined under any one individual. The last time Dr. Harris conducted in London during the peace year in 1919, to an audience of one million people, in Hyde Park, Queen Alexandra, and the members of the Royal Family.

India in England.

In the Indian Palace at the British Empire Exhibition there is a perfect reproduction of the famous Ajunta wall paintings. Ajunta is a ravine in Hyderabad where, over two hundred years before Christ, the Buddhists made temples in the caves, safe from the attack of wild animals and marauding tribes of men who did not hold the Buddhist faith, and painted on the walls of these caves some of the most marvellous pictures ever done in the history of the world.

Visitors to the Indian Palace at Wembley can see exactly what these caves are like, and study the frescoes without having to undergo the hardships necessary to the travellers who journey to the caves themselves. It is upon the traditions left in these caves by early Buddhists that the famous school of modern Indian art, founded by Sir Rabindranath Tagore in Calcutta, has based its week, much of which will be seen in the Bombay Court, and in the Indian room at the Palace of Arts. It is the first time in history that Europeans have been enabled to see what Indian art is really like. Mukel Dey, himself a student of Sir Rabindranath Tagore, and one who has taken the pilgrimage in person to the actual caves, has carried out the mural decoration.

India has made up its mind that here at least the visitor to Wembley will see the real thing. He will find himself looking upon design that the Western eye has never seen before.

A £4 Dinner.

The "Roast Beef and Yorkshire Pudding" Englishman or the American will find plenty to surprise him in the £4 dinner which the Hong

Kong Restaurant is putting on daily at the Wembley Exhibition. Like most rich Chinese meals, the dinner takes several days to prepare. Indeed the cooking in the restaurant started five days before it opened. The fantastic £4 meal, described as the Prince of Wales Menu, starts off with soup made out of birds' nests. The second of the 11 courses is stewed shark's fin; and the third, which sounds a little more intimate, a Kongnan-chicken stuffed with rice. Then comes fungus of lichen from Manchuria served with soup, soochon awaibi, and then duck, stewed with ham. Then there is custard in clear soup and several other dishes, until you come to the sweets. Here the Chinese excel in preserved fruits, many of them floating in honey. Mr. Stanley O. She, Assistant Secretary of the Hong Kong Section, says that the Chinese make many stranger dishes than these, including rats, which are caught and fed entirely on vegetation, but are not eaten until the fourth generation in captivity. He also said there is a special mountain in China from which actual parts of the earth, rare and hard to find, are boiled for many days until they become one of the most expensive dishes of the Chinese menu.

The Chinese Restaurant in the Hong Kong Section is lavishly decorated with the heavy colours and carvings which suggest its Eastern origin.

Bouncing Pottery.

In the British Guiana Pavilion at Wembley are some perfectly-designed jars and vases which suggest the finest examples of pottery from Egypt or the earliest days of Greece. But the attendant will surprise you by taking up one of the jars and throwing it on the floor. It will bounce into the air, and you can catch it unharmed. These jars, which look for all the world as if they were delicate, as most jars seem to be, are an example of the art of British Guiana, where the natives make dishes and pots out of the sap of a tree. The raw sap is white, but with the addition of pure dyes, extracted from tree bark, this bouncing pottery is coloured and made very beautiful.

The temperamental husband who feels inclined to drag the contents of the kitchen dresser on to the floor will be thwarted if British Guiana pottery becomes the vogue, for this new tree-oak "china" will merely bounce back and ignore the efforts of the home-wrecker.

By-centenary of Longmans.

A London Correspondent writes.—It is not an exaggeration to say that one of the literary events of the year is the celebration of the bi-centenary of the foundation of the famous publishing firm of Longmans. In view of the large Indian connection through its branches at Calcutta and Madras, the event has direct interest for you as well as for us.

It was in 1724 that young Thomas Longman purchased the business of William Taylor, who out of the handsome profits of "Robinson Crusoe," published five years before, had amalgamated the two houses at "The Sign of the Ship" and "The Black Swan" into one concern. On the same spot in Paternoster Row two hundred years later, the same family is still carrying on the business—or is it not the profession?—of publishing, and with the record of being the senior house in the trade. Hardly any famous name in the literary history of the last two hundred years is absent from their lists. They held some of the shares in Johnson's Dictionary, while their name is associated with Wordsworth, Southey, Charles Lamb, Scott, Macaulay, Froude, Max Muller, Lecky, R. L. S., William Moris, and a host of others. Among the most "profitable" of their clients have been Lindley Murray, the American Quaker grammarian, settled at York, whose "English Grammar" is still selling, and particularly Lord Macaulay, to whom in 1856 they paid a cheque for £20,000, merely on account of the profits of the third and fourth volumes of his "History". Macaulay made them a present of his "Lays of Ancient Rome" thinking they had no market value, but the publishers returned the copyright after the first edition had been quickly exhausted. All publishers may make mistakes, and if Longmans were guilty of refusing Carlyle's "Sartor Resartus" so also did John Murray and two other houses.

The history of the house of Longmans still remains to be written in book form, but I understand that "The Edinburgh Review" will deal fully with the history of its publishers in the autumn. What a pity "Longman's Magazine," after twenty-five years' publication, had to go the way of most of the literary magazines. The story of the firm, if it had appeared in its more popular pages, would have reached an even wider public than it will in "The Edinburgh".

Canadian Trade and Finance.

Montreal, May 1st, 1924.—From the time that Canada suspended gold payments at the beginning of the war, there has been a general feeling in this country that our currency would undoubtedly be re-established on a gold basis at some time in the future, when such action became feasible, and when it would not have a disturbing effect on business.

In our Monthly Letter dated May 1st, 1923, we expressed the opinion that gold payments could be resumed in Canada at any time. Since that date, the situation has not changed, but the question is of such importance that it seems well worth of fresh consideration.

A careful examination of our present position leads to the belief that gold payments could be resumed to-day without any action being necessary, other than an official announcement to the effect that Domonion notes were once more convertible into gold at the offices of the Receiver-General, and that gold could be exported and imported at will, the announcement to be backed by such legislative action as would be required to bring pre-war laws governing the Dominion note issue into conformity with the actual state of affairs. Not every country could get back to a gold basis in this very simple way. Many are prevented from doing so, because their note issues are inflated, and their price levels relatively too high. We shall attempt to show below that this is far from being the case in Canada, and that a return to the gold standard in this country would not involve the presentation of notes in large volume for conversion, nor would it involve a fall in prices.

Dominion and Bank Note Issues.
(Millions of Dollars).

	Dominion	Bank	Total.
1914.....	114	104	218
1924 (Jan. 31st)	195*	157	352

When considering the increase in note issues, it must be remembered that, during the period covered by the statistics quoted above, prices in the United States, the great gold standard country, have increased 50 per cent; other things being equal, this price increase means that to carry on the country's business, we require a note issue 50 per cent larger than in 1914, namely, an issue of $327,000,000. During the ten years, however, our population has increased in number 10 per cent, and our productive capacity in still larger degree. A wheat harvest of 474,000,000 bushels in 1923, compares with one of 161,000,000 in 1914. Total foreign trade, which will approximate a value of $1,900,000,000 in the fiscal year ending March 1924, compares with a total foreign trade of $1,073,000,000 in 1914; these are only a few of the changes which have taken place. The surprising thing is, not that our note issues have increased to $352,000,000, but that the country's business can to-day operate on an issue no larger than the existing one.

The gold reserve held by the Dominion Government against its note issues as at Janunary 31st, 1924, was $102,858,880, the banks held in gold and subsidiary coin $44,800,000, and there was a further amount of approximately $9,000,000 actual gold in the Central Gold Reserve. Although the precentage of reserve is not as high as it was in 1914, it is fully large enough to provide the measure of protection which experience has found necessary or desirable.

The price situation is just as sound as the note situation. As at December 31st, 1923, Canadian prices showed an increase over the 1913 level not more than 2 per cent greater than the increase in the United States.

As our note issues are not inflated and our price level not unduly high, it follows that, not only could gold payments be resumed at any time, but that such action would have no disturbing effect on business.

The argument on this subject is simplified by the fact that, during the months of October and November, 1922, when the Canadian dollar was at par or at a premium in New York, business did not suffer, nor prices decline. On the contrary, they rose slightly. During those months, the simple procedure of buying a draft on the United States, and paying for it in Dominion or Canadian bank notes, gave any holder of our note issues the opportunity to secure full value in gold for the paper he held. At that time, we were to all intents and purposes on a gold basis, and did not know the difference.

Since that time, the Canadian dollar has not been at par in New York, the discount being usually a small one, but at times going as high as 3⅝ per cent. Until we resume gold payments, our currency will continue to fluctuate in New York, even though the Canadian financial situation is an absolutely sound one.

*After deducting Dominion Notes in Central Gold Reserve.

As a country, we are paying our way from year to year. But even though our claims and liabilities on foreign account are in equilibrium over the year, it does not follow that they are in equilibrium every day. At times, buyers of foreign currency predominate, at times sellers predominate. In the autumn of each year, heavy shipments of Canadian grain make Canada a large seller of foreign exchange. The premium on U. S. funds is then low. After the close of navigation, our requirements for foreign exchange to cover imports and other obligations tend to be slightly larger than the supply of foreign currency available from export sales. The premium on U. S. funds is bid up. Someone, then, perhaps ceases to compete, and decides to await a more favourable moment to transfer their money from Canada to the United States or elsewhere. Demand and supply balance. It is never possible for the Canadian dollar to command more than a very small premium over the U. S. dollar, and unless gold payments are resumed, the tendency will always be towards a discount on Canadian funds.

The country gains nothing from the existing situation, for it most certainly does not enable us to make foreign countries pay more of their currency for our products. The advantage gained by our exporters, when converting foreign currency into Canadian dollars, is entirely off-set by the disadvantage encountered when importers have to buy foreign currency to cover their obligations. What one Canadian gains, another loses. The loss to the Canadian consumer, calculated on imports worth $879,000,000, and an average premium on gold currency of 2 per cent, was about $17,580,000 during the last twelve months. The loss on interest payments, on Dominion, provincial and municipal bond issues outstanding in England and the United States, can be estimated at about $1,300,000 annually.

The disadvantage to the country as a whole lies in the fluctuations of the rate for U. S. funds. Exchange fluctuations carry with them a risk of loss, and have been a great impediment to business all over the world, since the time the gold basis was abandoned. No one in Canada buying goods from the United States, for delivery in a few months' time, knows what the goods are going to cost in Canadian funds at date of delivery. A cotton manufacturer, buying raw cotton while the premium is at a certain level, has no assurance that, by the time the finished goods are being sold in competition with foreign manufacturers, the premium will not have declined and involved him in a loss. The grain exporter, in addition to protecting himself against fluctuations in the price for wheat, and against the exchange fluctuations of European currencies on the New York market, has also to protect himself against a change in the rate for American funds. Protection by means of buying or selling U. S. exchange futures is a difficult matter in most cases, and in all cases adds to the cost of doing business.

Commodity price fluctuations involve any business man in quite enough risk, without adding the exchange risk to his burden, if it can possibly be avoided; and that it can be avoided in our relations with the United States is what we have been endeavouring to show.

The United States until recently was the only country on a gold basis. Within the last few weeks, Sweden, a country with a higher price level than Canada and a gold reserve little superior to ours, is reported to have resumed gold payments. If Canada now took this action, she would be the first country actively engaged in the war from start to finish to do so. Her credit standing would be enhanced all over the world. Capital, ever apprehensive of the risk of exchange fluctuations, and rendered thoroughly nervous by the vagaries of European moneys, would see in this country a safe haven for investment. This is one of the steps open to us at the present time which would tend decisively to advance us on our way towards renewed progress and development.

The Gold Problem of the United States.

The gold problem of the United States has no connection with the subject discussed above, but the position in which they find themselves in regard to gold at the present time is a very interesting one. After having received a great quantity during and immediately after the war, at the expense of other countries' stocks of the precious metal, the United States continues to take most of the world's annual production. The world's requirements for gold can be divided into three main categories; the amount required for use in manufacturing, the amount required by the Orient for hoarding, and the amount required for monetary purposes. The demand from the first two named sources absorbs only a moderate portion of the annual production, and gold is now hardly used at all as a circulating medium, so the main

source of demand is from central banks or governments who use gold as a reserve. The central banks and treasuries of Europe are to-day holding more gold than they did before the war. Increases in the holdings of such countries as England are largely balanced by declines elsewhere. The increase in holdings was largely a war-time phenomenon, and for some time past Europe has shown no desire to accumulate larger reserves of this expensive metal. The gold unwanted by the rest of the world consequently continues to pour into the United States, which, as a gold standard country, must receive it in any quantity.

The fact that gold is used as money tends to obscure the fact that its exchange value is determined in the same way as the exchange value of any other commodity—by demand and supply. The decline in the value of gold since 1913 is measured by a rise in the Index Number of United States prices from 100 in that year to 150 in 1924. The limitation of European requirements, and the continued influx of gold, undoubtedly would have resulted in inflation and a higher price level than the one now prevailing, had it not been for the policy pursued by the Federal Reserve System, during the last three years.

As the average bank in the United States wants little gold in stock, and as the people want practically none, the incoming supplies quickly reach the hands of the United States Treasury and the Federal Reserve Banks. The latter, basing their policy on the sound theory that stability in prices is a desirable thing, have allowed the gold to accumulate in their vaults, without using it as a basis for the extension of credit. During the last year and a half, they have been assisted very greatly by the fact that active business and production on a large scale throughout the country have increased the legitimate demands for credit and currency. Additional credit has been supplied by the National and State Banks, without enlarging their borrowings from the Federal Reserve, while an increase in currency circulation has served to absorb the gold imports in the form of gold certificates. Instead of pushing the circulation of Federal Reserve notes, the policy has been to encourage the circulation of these gold certificates, which are backed by 100 cents in actual gold held in the Treasury. The circulation of this form of money increased from $171,000,000 on June 1st, 1922, to $571,000,000 on February 1st, 1924, at the same time as Federal Reserve notes in circulation declined from $2,156,000,000 to $2,008,000,000.

Reserve Percentages.

The Federal Reserve System is only obliged by law to keep a cash reserve of 35 per cent against deposits, and 40 per cent against notes in circulation. We show, below, the present position of the System, the cash reserves, (almost entirely gold) being divided for the purposes of the present article into percentages of notes and deposits.

April 16, 1924.

Federal Reserve notes in circulation ..	$1,966,349,000	
100% Reserve ..		$1,966,349,000
Deposits in Federal Reserve Banks	2,011,585,000	
61.5% Reserve		1,238,941,000
Total Notes and Deposits ..	3,977,934,000	
Total Cash Reserves		3,205,290,000

Combined Percentage Reserve 80.6.

Every dollar in circulation in the form of Federal Reserve notes can be considered as backed by 100 cents in gold, and every dollar on deposit in the Federal Reserve Banks, as backed by 61.5 cents in gold, these percentages being now far above what practice has found necessary.

This large percentage reserve has been allowed to accumulate for the express purpose of avoiding inflation. The Federal Reserve System recently gave official publicity to their policy, stating that discount rates and credit facilities are not now determined by reserve percentages.

What lends the situation its great interest to-day is the possibility that the present state of affairs cannot long be maintained in the face of continued heavy imports of gold. The Federal Reserve System has only a limited power of absorbing gold in such a way as to prevent it from affecting bank credit and prices. The incoming gold is received by the commercial banks. Without detailing the process, we can say that usually its first effect is to increase the amount which the member banks have on deposit with the Federal Reserve Banks. Now the member banks receive no interest on their deposit with the Federal Reserve and have no desire to hold there more than the law requires. When their deposits rise above the amount legally necessary, the excess is used either to reduce their borrowings from the Federal Reserve System, or, if they are not borrowers, to enlarge their loans or holdings of securities. Member bank borrowings in the shape of rediscounts stood at $469,000,000 on April

16th, 1924, as compared with $643,000,000 on April 18th, 1923. If rediscounts were all paid off, the Federal Reserve System could still absorb a further $443,000,000 gold by selling that amount of Government securities and bills purchased in the open market, which it now holds. The total of these items referred to is $912,000,000, an amount somewhat less than two years' imports of gold at the rate at which imports were received in the first quarter of 1924.

If gold imports continued after member bank borrowings had been repaid and bills and securities held by the System had been disposed of, the effort of the banks to find employment for their surplus reserves would inevitably tend to have as a result, first, lower interest rates, later, an increase in commercial borrowings, and, finally, rising prices.

If the above presents an accurate picture of the situation, then the price decline which has been going on in the United States since September is not liable to be carried very far. We have considered the theoretical possibility of the Reserve System accumulating a reserve of 100 per cent against note and deposit liabilities, but such a point is most unlikely to be arrived at in practice. It would mean, for one thing, that the Federal Reserve System had no earning assets, or, in other words, nothing coming in with which to pay its annual operating costs of $29,000,000. Under present conditions, the System requires earning assets of not less than $650,000,000, in order to pay expenses, and earning assets could only fall some $250,000,000 below their present figures without resulting in an operating loss.

The United States situation has an important bearing on European finance, and is being watched, especially by England, with the greatest interest. The European countries who borrowed $10,000,000,000 from the United States during the war, did so during a time of high prices. The actual cash was of no use to them; they immediately turned the ten billion dollars credit into food-stuffs and munitions, purchasing these supplies while the United States price index for such goods averaged at least 200. Now, when they come to repay their debts, the price index stands at 150.

The monetary terms only serve to obscure such transactions. Commodities are the real basis. The ten billion dollars, which these countries are obliged to repay the United States, represent to-day about 33 per cent more in actual goods than was received by the borrowers during the war. A general rise in the United States price level would have the effect of sparing these countries a portion of the heavy losses which deflation inflicted on them. It would also simplify the task of restoring the pound sterling and certain other currencies to a gold basis. The next twelve months should yield an indication of what results can be expected.

The Principal of the Commercial College, Delhi, in the course of a lengthy communication to Dr. H. S. Gour, Vice-Chancellor of the Delhi University, says: "If Delhi could be constituted as a centre for the examinations of the University of London, a very large number of poor but intelligent and hard-working young men of India shall be in a position to get all the benefits of British education without being called upon to spend prohibitively large sums in going over to England. It would also help gradually in raising the standard of education of the Indian Universities. It would be in no way detrimental to the interests of the Indian Universities as it is only the graduates, or those who have passed the Senior School Certificate Examination of the Cambridge University with credit in certain subjects who are eligible for appearing in the examinations of the London University as external students." This question has already been considered by the Educational Commissioner for India who is of the opinion that the status of Indian Universities would be undermined by conducting examinations on behalf of British Universities in this country. We feel, says *The Daily Gazette*, that this is rather a narrow view considering that the examinations of the University of London have been conducted for years past in Canada and Australia. If the standard of education is to be raised in Indian Universities, petty prejudice of this kind must be swept aside. We have every confidence that the Sub-Committee appointed by the University Conference in Simla last week will recommend facilities for holding the examinations of British Universities in India which will be a great boon to Indian students.

The British Budget.

London, 31st May 1924.—The first Socialist Government have produced a budget which marks no departure from the principles of conservative and orthodox finance. The provisions made for debt reduction constitute a continuance of the policy of the previous Government, no new lines of expenditure have been embarked upon, while the revisions of taxation have with a single exception received general approval. The demise of the corporation profits tax received a welcome of exceptional warmth from the business community as a result of the widely held opinion that its decease was as long overdue as its birth was deplored. At the same time the drastic reductions in the "breakfast table" duties could not fail to win general support since they substantiate a promise made by all political parties alike at the time of the last election. Some disappointment is felt that the Chancellor found it impracticable to restore the penny postage, but on the other hand the absence of any increase in direct taxation should assist the process of enhancing confidence, encouraging investment and expansion in home industries, and thereby indirectly stimulating a revival of trade. The main controversial issue raised by the budget proposals is one affecting not industry as a whole but certain trades which have received some measure of protection, almost by accident, as a result of the imposition of war-time duties aimed at the enforcement of essential economies in shipping space as well as in private expenditure. It is around the central point of these emergency duties that the battle of the budget is most likely to be fought.

Financial Year 1923–24.

In his review of the past year the Chancellor pointed out that the realized surplus of £48,329,000 was due as to 18½ millions to excess revenue and as to 27¾ millions to reduced expenditure, the balance being the surplus estimated on last year's budget. Revenue receipts under nearly every head approximated closely to the estimates, the surplus resulting largely from the increased consumption of spirits and tobacco, the greater productivity of income-tax arrears, and a larger yield from corporation profits tax due to a higher level of profits and to an improvement in the rate of collection. Excess profits duty showed a deficit of £1,900,000, gross receipts of £23,500,000 being more than offset by repayments of £25,400,000. The arrears in respect of this tax are 160 millions. The main items of special receipts, amounting to nearly 37 millions as compared with 51 millions last year, were disposals £22,500,000, shipping liquidation £4,500,000, food liquidation £2,250,000, repayment of advances to Southern Rhodesia £2,300,000, and gold salved from the "Laurentic" £2,000,000.

Expenditure upon the debt services was 2¾ millions below estimate, and included 7 millions of interest on Savings Certificates repaid and 40 millions sinking fund. The reduction was due to variations in the interest rates on Treasury Bills. The saving of 16 millions on the fighting forces, comparing actual with estimate, is attributed by the Chancellor mainly to a fall in prices, delay in beginning works services and war re-instatements, slow recruiting and changes in the programme with regard to the naval base at Singapore and to the Middle East.

National Debt.

At the end of the financial year the gross deadweight debt amounted to 7,680 millions, as compared with 7,772 millions a year earlier and a maximum of nearly 8,000 millions on December 31, 1919. External debt amounted to 1,126 millions on March 31 last, and internal debt to 6,554 millions, the reductions in the year being 30 millions and 62 millions respectively. Transactions affecting our external obligations included the repayment of 17½ millions to the American Government and 70 million dollars to Canada. The only external debt now owing by this country is that to the United States Government, amounting to 940½ millions at par of exchange, certain market loans in America totalling 45½ millions and a small amount owing to the Straits Settlements. There is outstanding, however, a sum of 132 millions due to certain allied governments, but this may be regarded as a set-off against allied borrowings from this country during the war. Loans to Allies, including accrued interest, now total 2,001 millions, so that on inter-allied loan account this country is a creditor to the extent of 1,869 millions. In addition 131 millions is owing by Dominions for loans granted during the war, and 31 millions by other foreign governments for relief and reconstruction loans. In the appended statement the amounts of the external and internal debts are shown at different dates.

The face value reductions since the peak was reached in December 1919 have been 175 millions in external and 150 in internal debt, but, when allowance is made for increases in nominal value arising from conversions, the reductions in the past four and a quarter years, according to the Chancellor, are 250 millions and 400 millions respectively. It is interesting to note that this estimated reduction of 650 millions in the dead-weight debt corresponds very closely with the sum realized through the sale of surplus war stocks and properties.

Gross Deadweight Debt.

(000 omitted.)

	External Debt*	Internal Debt	Total
	£	£	£
1914 March 31...	—	651,270	651,270
1915 ,, ...	—	—	1,108,817
1916 ,, ...	—	—	2,140,749
1917 ,, ...	—	—	4,011,446
1918 ,, ...	—	—	5,871,851
1919 ,, ...	1,364,850	6,070,099	7,434,949
1919 Dec. 31...	1,300,000†	6,700,000†	7,998,000†
1920 Mar. 31...	1,278,714	6,553,030	7,831,744
1921 ,, ...	1,161,563	6,423,847	7,585,410
1922 ,, ...	1,088,670	6,587,625	7,676,295
1923 ,, ...	1,155,653	6,616,743	7,772,396
1924 ,, ...	1,125,813	6,554,671	7,680,484

* At par of exchange. † Approximate figures.

REVENUE, 1924–25.

On last year's basis of taxation the Treasury estimate a revenue of 828 millions, or 38 millions in excess of the estimated expenditure. The cost of the proposed changes in taxation in a full year is 48 millions, but as not more than 34 millions will be lost this year a surplus of 4 millions should be available for contingencies. The yield from income-tax is expected to be within 4½ millions of the sum collected in 1923–24, despite the fact that last year's reduction in the rate will be fully effective and that assessable profits will be on a lower basis. It is thought that the recent improvement in the rate of collection will continue and counterbalance the adverse factors mentioned. The yield from super-tax is placed at 61 millions or slightly more than last year. The arrears on income-tax and super-tax account at the end of March were 20 and 42 millions respectively. Corporation profits tax will bring in some 3½ millions less than last year, although the lower rate which came into force in June last will affect the majority of the assessments to be made. The total of the arrears on March 31 last has been given as 10 millions. With regard to the 30 millions of special receipts, 8 or 9 millions is expected to come from disposals and 10 millions on the reparation recovery account. No allowance has been made for the receipt of additional reparation payments.

EXPENDITURE, 1924–25.

It is estimated that consolidated fund services will require 385 millions including 45 millions for sinking fund in accordance with the Finance Act of 1923. The total expenditure for the coming year is estimated at 790 millions as compared with just under 789 millions spent last year. Less than 3¼ millions represents special expenditure for liquidation of war commitments.

PROPOSED REVISIONS IN TAXATION.

Sugar.—During the war the duty on sugar was increased fourteen-fold or to a greater extent than on any other taxed article. The duty has been reduced from 25*s.* 8*d.* to 11*s.* 8*d.* per cwt., or by 1½*d.* a lb. The lower duty came into effect on April 30, except for imported goods manufactured or prepared with sugar in which case the date of the change is July 1 next. In the current year the cost of these remissions is estimated at £17,700,000 and in a full year at £18,400,000.

Tea, Cocoa and Coffee Duties.—The standard rate of duty on tea, hitherto equal to 8*d.* a lb., is to be halved as from May 5 bringing it below the pre-war rate.

As the bulk of the tea consumed in this country comes from India and Ceylon and enjoys a preference of one-sixth, the future duty on the greater proportion of the tea sold will be 3⅓*d.* The estimated cost of the lower tea duty is placed at £5,000,000 this year and £5,400,000 in a full year. The cut in the tea duty carries with it similar reductions in the duties on coffee and chicory, effective May 5, and on cocoa, effective immediately, except in the case of imported cocoa preparations where the reduction will date from July 1 next. These remissions will involve a loss of £800,000 this year and £843,000 in a full year.

Dried Fruits.—The additional duty of 50 per cent on raisins, figs and plums, dried or otherwise preserved, imposed in September 1915 will lapse on August 1 next at a cost of £200,000 this year and £1,250,000 in a full year.

Sweetened Table Waters.—The duties on sweetened table waters, covering also herb beer, originally imposed in 1916 at the rate of 4*d.* a gallon and halved a year ago are to be

taken off immediately at a cost of £200,000 this year and £300,000 in a full year.

Entertainments Duty.—The duty will be removed on payments for admission up to and including 6*d.*, reduced by 50 per cent on payments over 6*d.* and up to and including 1*s.* 1*d.*, and lowered by 25 per cent for payments over 1*s.* 1*d.* and not exceeding 1*s.* 4*d.* No changes are to be made in the rates of duty on higher priced tickets. The proposed changes will become effective on June 2 next and are estimated to cost £3,400,000 this year and £4,000,000 in a full year.

New Import Duties.—The 33⅓ per cent *ad valorem* duty imposed in 1915 on imported motor cars and motor cycles other than commercial vehicles, musical instruments, clocks and watches, and cinematograph films are to be renewed until August 1 next when it is proposed they shall finally expire. The cost of the abolition of these duties will be £2,500,000 this year and £2,750,000 in a full year.

The net amounts collected from these duties last year under the various heads were as follows :—

	£
Cinematograph films	289,000
Clocks, watches, and parts ..	542,000
Motor cars, motor cycles, and parts and accessories ..	1,436,000
Musical instruments and parts and accessories	323,000
	2,590,000

Motor Vehicle Duties.—It is proposed to adopt two interim recommendations of the Committee upon the Taxation of Mechanically-Propelled Vehicles. The first is that on the payment of a small fee a license may be surrendered at any time, and a refund obtained for each complete calendar month unexpired. The other recommendation is to reduce the surcharge on quarterly licenses from 20 per cent to 10 per cent. These concessions will come into effect on January 1 next, or earlier if possible, and while the cost this year will be small in a full year the Road Fund receipts will be reduced by £500,000.

Inhabited House Duty.—This duty which has been in force, with an intermission of sixteen years, for nearly a century and a half is to be repealed as from the beginning of the year of assessment 1924–25. The loss to the Exchequer this year is put at £1,750,000 and in a full year £2,000,000. The duties in force last year on the annual value of houses were 3*d.* in the £ where the annual value was between £30 and £60, 6*d.* in the £ between £60 and £90, and 9*d.* for houses over £90. The rate was lower by one-third for residential shops, hotels, public houses, coffee houses, farm houses and lodging houses.

Income-Tax.—No change is being made either in the standard rate or in the abatement allowances, other than the removal of the limitation of the allowance granted to a widow or widower for a housekeeper in those cases where young children have to be looked after.

It is proposed to grant a right of appeal to tax-payers claiming exemption from income-tax on the ground that they are not ordinarily resident in this country.

Corporation Profits Tax.—It is proposed to repeal this tax in respect of profits arising after June 30 next. A year ago the rate of tax was reduced from 1*s.* to 6*d.* in the £ on profits obtained after June 30 last. The cut in the rate then made was expected to affect the revenue of 1924–25 by £2,000,000 with an ultimate loss of £12,500,000, while the proposed abolition of the tax is expected to involve a further diminution of £2,000,000 this year, £5,000,000 next year, and an ultimate loss of £12,500,000.

Telephone Charges.—It is proposed to reduce by 20 per cent local call rates up to a distance of 7½ miles and to lower by 1*d.* the rates for trunk line calls between 7 A.M. and 2 P.M. for distances not exceeding 35 miles and between 2 P.M. and 7 P.M. for distances over 10 and under 50 miles. The present scale of charges for removals will be modified and various reductions are to be made in other charges. The cost of these concessions in the current year is put at £500,000 and in a full year £1,000,000.

There has now been established in Jutland for 25 years a concern for supplying feeding stuffs and grain to consumers on a co-operative basis. The accounts of the concern for the past year have been published, and show that sales amounted to 260,382,935 kilogrammes, valued at 65,790,038 kroner, increases of 29,000,000 kilogrammes and 2,500,000 kroner. The net profit was 2,131,144 kroner or about 82 öre per 100 kilogrammes. The local branches of the concern will thus receive 25 öre for each 100 kilogrammes taken by them during the year, or 650,975 kroner in all. A similar amount will be added to the reserve fund.

Economics in the West.

London.—The *Times'* comment on the New Indian Tariff Policy is a characteristic one. Here are a few of the points raised :—

Although it cannot be said that the proposals of the Indian Tariff Board are unexpected, they will cause considerable uneasiness. The policy of Great Britain is, and always must be, based on the fundamental principle that the interests of each part of the Empire shall be paramount in the eyes of its administration. As we said recently, the congeries of States comprising the British Commonwealth does not in the least resemble the Empires of the past, in which subject States sent their tribute year by year to the conqueror. Every enlightened person desires that each part of the Empire should attain the highest degree of development of which it is capable, for it is axiomatic that only prosperous communities can breed valuable customers for the goods which Great Britain produces. By the growth of commerce in the produce of the various States the welfare and prosperity of the Empire are assured. It is unfortunate that India should be embarking upon a policy of self-containment, so far as it may be found practicable, at a moment when an exhibition of all the resources of the Empire is being held at Wembley. That Exhibition can have no meaning other than to provide a stimulus to the co-operation of all parts of the King's Dominions in the work of development, and although the action of India is perfectly legitimate, it is unfortunate that the spirit inspiring it should have become manifest during the first week of the Great Exhibition.

* * *

Every fiscal policy entails disadvantages as well as advantages. The question is whether, on balance, India will derive greater benefit from a protective policy than from continued adherence to free trade, and it is admittedly difficult for any one in this country to discuss that question with absolute impartiality. Convinced free traders will honestly believe that India is making a grave economic mistake, and they will point to the fact that of the 315,000,000 inhabitants over two-thirds live on the land. Yet it is only fair to remember that in adopting a protective policy, India is following the example that has been set her by many other countries since the Great War. The chaotic condition to which commerce was then reduced, and the collapse of credit over wide areas, have resulted in widespread unemployment, and all Governments are seeking to create alternative sources of employment for their peoples who have suffered by the loss of foreign markets by protecting home industries. Indeed, that was the issue at the last election in Great Britain. It is quite clear from the report of the Indian Tariff Board that what has been uppermost in the minds of the members has been the importance of so arranging their plan of protection that any burden upon the consumer should be as widely distributed and as light as possible. Only those branches of the steel industry in which it is believed that India can ultimately compete with the world have been selected for protection. In some cases this assistance is not to be rendered by import duties, but by bounties spread over a specified period of years. It is argued that if by present sacrifice it is possible to establish prosperous industries, capable of meeting world competition it is a wise investment to do so. The difficulty of establishing such industries is often too great for unaided private enterprize.

* * *

British exporters cannot forget that India has been for many years the largest market for their goods. She has filled three-quarters of her requirements of manufactured goods from British sources, and any interference with the flow of British commodities to India will constitute a very serious threat to the prosperity of the export trade by which alone this country is enabled to continue to draw those vast quantities of food and raw materials that are not produced in these islands. Ultimately the prosperity of Indian industry will create other wants which will, we trust, be filled by British manufacturers, but the immediate outlook is less encouraging. Whether we like it or not, we have to recognize that the policy of self-containment is being adopted very widely in all parts of the world, and the fact constitutes a threat to the continued prosperity of this country. It would seem that the only logical method of meeting reduced demand from overseas is to reserve for our manufacturing industries as large a share as possible of the home trade. That policy was rejected at the General Election and apparently finds little favour at present with the Labour Party, but we are convinced that ultimately the pressure of events will prove too strong to be resisted by the nation. Our fiscal policy cannot for ever continue to be dictated from the standpoint of academic

theory ; sooner or later it must be brought into consonance with conditions existing throughout the world.

The Swiss Silk Trade.

Official statistics for 1923 show a slight improvement in foreign trade in silks, the previous year having, in its turn, been better than 1921, which was a year of severe crisis. The pre-war turnover is not yet achieved, however, and individual branches of the silk industry are far from enjoying normal conditions. Nevertheless, the fact that the raw silk consumption of the industry in 1923 was only about half as great as before the war, must not lead to the conclusion that production was correspondingly less. It is more a question of a change in the type of manufactures, increasing use being now made of artificial spinning material, cotton, wool or chappé. Total imports of grége, organzin and trame amounted in 1923, 1922 and 1913 respectively to 1,135,000, 1,788,000 and 2,819,000 kilogrammes, of which 127,000, 318,000, and 847,000 kilogrammes respectively were re-exported. To the quantities available for home consumption in these years, *viz.*, 1,008,000, 1,470,000 and 1,972,000 kilogrammes, must be added 1,005,000, 900,000 and 265,000 kilogrammes, respectively of artificial silk imported. We see that almost as much artificial silk was imported in 1923 as there was natural silk available, although Switzerland has a considerable home production of artificial silk. Artificial silk, of course, is used by other than the silk industry proper, *viz.*, the woven and straw goods industries.

The total amount of silk and half-silk fabrics exported amounted in 1923 to 1,931,500 kilogrammes of a value of 188,300,000 francs, as against 1,694,900 kilogrammes and 172,300,000 francs in 1922 (2,138,200 kilogrammes and 105,200,000 francs in 1913). Exports are therefore, in respect of bulk, 14% greater than in 1922, and have reached approximately 90% of the pre-war volume.

Family Allowances to Workers.

The system of the application of the principle of "equal pay for equal work," states Professor Roger Picard in an article in the "International Labour Review," is liable to favour certain categories of workers, but to place others at a disadvantage. If the worker's wages are proportionate to the quantity and quality of his work, and if no allowance is made for his responsibilities, the consequence will be that a married man with children will earn the same wages as an unmarried man doing similar work: the one will have an ample income, while the other does not receive sufficient to provide proper support for his wife and children. The inequality which thus arises has become more and more clear in consequence of the steady rise in the cost of living which has taken place in recent years. In France and in certain other countries a system is now in operation whereby supplementary grants are given to married workers with children in addition to their ordinary wages.

Since 1916 a constantly increasing number of industrial undertakings in France have paid family allowances to their workers. In order to equalize the expenditure thus involved they have formed compensation funds, to which they pay contributions in proportion to their staff or wages bill : the family allowances are then paid by the compensation funds. The rate of the allowance differs in different districts. Some funds have a regressive scale under which the worker gets less for the second child than for the first and less for the third than for the second. But most of the funds aim at promoting an increased birth-rate and have a progressive scale increasing the amount payable per child with the number of children and some pay a uniform rate for all children. Some funds, finally, pay various bonuses in addition to the ordinary allowances, such as maternity and nursing bonuses, and sometimes even a bonus to a workman's wife who is solely occupied in taking care of the family.

Employment of War Cripples.

The experts who are now in Genova to attend the Conference summoned by the International Labour Office to study the question of employment of war cripples, have received a report from a Labour Office giving an estimate of the number of war cripples receiving pensions. The figures are :—Germany, 1,537,000 ; Australia, 76,000 ; Austria, 164,000 ; Belgium, 50,000 ; Canada, 45,000 ; United States, 157,000 ; Finland, 10,000 ; France, 1,500,000 ; Great Britain, 1,170,000 ; Italy, 800,000 ; Poland, 320,000 ; Roumania, 100,000 ; Yugo-Slavia, 161,000 ; Russia, 775,000 ; Czecho-Slovakia, 236,000 ; New Zealand, 20,000. To this total of 7,121,000 pensioned war cripples should be added all those of Turkey, Bulgaria, Portugal, Hungary, and Japan, and the Baltic States, so that the estimated grand total is over ten millions.

In the present economic year about 200,000 articles of agricultural machinery have been sold by the official agricultural union in Russia.

Men of To-Day.

Mr. Ramsay MacDonald.

When history comes, as they say, to be written instead of being merely made by persons who have not read any, there will be something quite interesting to say about English politics.....Politics, since 1900, have been the British substitute for a revolution. There is a shrewd saying somewhere in the scattered wisdom of Mr. K. Chesterton that the greatest historical event of the Nineteenth Century was the English Revolution which omitted to take place between the years 1829 and 1832. One may add without discourtesy, that his greatest historical work is the one which he has omitted to write about it. There, at any rate, in the years between Waterloo and the Reform Bill, was a corner which Great Britain managed to turn by political team-work, whilst almost every Continental contemporary preferred to swing round it on the wheel in the sharp movement of a revolution. There was some jolting, a little cracking of the whip, a faint apprehension among the more nervous passengers. But they managed some flow to prevent the leaders from kicking over the traces and to keep the vehicle on the road with King William, on top of it; and the old gentlemen in the rumble continued to talk politics, whilst their neighbours on the Continent were talking carricades. It was unheroic; it was almost dull. But it was a method by which England managed to transform itself without the more dramath cut and trust of a revolution.

That or something like it, has once again been the course of English politics in more recent times; and the historian will have much the same story to tell of Mr. Asquith and has sprightlier contemporaries as he had about Lord Grey and the men of first Reform Bill. There is once more the slow drift of parties, the eddy of personalities which took the British Empire and its mixed cargo out of the world revolution of 19...., one forgets the date. The history is queer and crowded and full of earnest gentlemen in pricenez. One can see the odd transformation of the Victorian scene which followed the Boer War the marshalling of the new forces in the wings of Mr. Balfour longed in the centre of the stage, and then the slow surge of the crowds which filled the scene and elbowed the principals off the boards. One hopes that the ending when it comes will be a happy ending. But it is a strange story.

Unhappily for our pride, perhaps, we shall never read it, because, it is a dismal convention that history is never written until it is not worth reading. Most of us were taught at school that the story of mankind ended in the year 1832. A younger and more adventurous generation may have penetrated the jungle as far as 1886. It is even conceivable that in some of the more daring Infant Schools they have reached the accession of King Edward VII. But contemporary history will not be written until we are all past reading, and by a pleasing and recurrent irony it will be completely wasted on the generation which is privileged to study it. Patent researches will excavate all the mysteries that excite our wildest conjectures. The soul of Mr. Z, the secret motives of Sir W. V., the eternal riddle of Lord Y., will be laid bare before a roomful of bored students; and our masters will be eviscerated in an empty operating theatre. The cornucopia of history will pour revelations in more than putinian profusion before our dull eyed descendants; and a longuid posterity will turn an apathetic stare on the true story of Mr. Lloyd George. They will find Mr Churchill and his Bolsheviks as dreary as King Alfred and the Cakes; and aspirants to the doctorates of universities as yet undreamt of will present these on the British Labour Movements. One hastens with the true humility of a mere contemporary, to submit a few notes for their guidance.

The Movement (one shrinks from the admission in a study of its titular leader) is more remarkable for its facts than for its figures. There is something impressive in the evolution of British Socialism from an imported fad with a slightly German accent into the accepted doctrine of organized Labour; and the rapid expansion of the Party which once was almost covered by the brim of Mr. John Burns, straw hat, is a solid and significant fact. But in its progress through Terror (as Mr. Lloyd George used to say) to Triumph it has been strikingly unproductive of those figures by which Englishmen love to identify their political parties. In the days when Mr. Gladstone wore a collar and Lord Beaconsfield a forelock, it was so easy to be either a little

Liberal or else a little Conservative. But, labour has been singularly sparing of such meretricious aids to the National memory. Refusing resolutely to be identified with the personal characteristics of Mr. Keir Hardie, it appears ever since to have selected its leaders according to their lack of idiosyncrasies. Inconspicuousness, in one quarter of the House at least, seems to have been elevated into a political virtue. Whilst the Unionists chose a leader because he wore an eye-glass with hereditary aptitude, and Liberal statesmen vied with one another in the wild exuberance of their Gladstonian coiffure. Labour remained faithful to the less adventurous charms of Mr. Henderson and Mr. Clynes. Other parties might seek figure-heads in the rich pictorial manner of Sir John Tenniel and F. C. G. But Labour, so far as one can judge by results, has set its heart on a Front Bench designed by the sober pencil of Mr. George Morrow.

Mr. Ramsay MacDonald is a brave continuation of this austere tradition. In a party which abounds in rich curves and sudden contrasts of emotion (and even of colour), he presents a plain rectangular appearance, a warning, it may be to the more recoco figures to which other parties have vowed allegiance. Mr. H. G. Wells somewhere denounced the politics of the Nineteenth Century as a sort of procession of big heads from a pantomime, and rejoiced over the disappearance of the effigy. Perhaps we are arriving slowly at an age of pure reason, when the public will be equal to distinguishing the rival leaders of political thought by their deaws without relying, as at present it has come to rely almost entirely on the competing achievements of their barbers and their tailors.

But Mr. MacDonald's leadership is more significant than that. He represents with rare completeness the articulate element of the Labour Movement. Every party consists of a head and a tail : it is almost always the head that does the talking. But in Labour, there is a sharper contrast than elsewhere, between the little sentiment-speaking group that at the top, and the vast, unapproachable, inarticulate mass that votes by the hundred thousand at card-votes in Trade Union Congress. The head so manifestly, even a shade pretentiously cerebrates ; and the remainder of the party acquiesces with amazing completeness in the humbler functions of the body. Mr. Clynes and before him, Mr. Henderson, were vaguely typical of the body of the party. Ramsay MacDonald represents the head. It is a quarter from which few political parties have chosen their leaders, since the country party acquiesced helplessly in Mr. Disraeli.

There has always been a faint touch of arrogance about Labour thought, a tendency in its leading thinkers to reply to argument with the superior snigger of the man who knows better. Perhaps they learned it at the Fabian Society. Conceivably, it is a distant echo of the titter with which Mr. Bernard Shaw answers the riddle of the universe. But it is an unfortunate mannerism in statesmen. Long practice in the character of a disillusioned minority has impaired the charm of their expressions ; they have sat far too long with curling lips, listening to the bandied futilities of effect and competing Capitalist disputants, to confront their future as National leaders with the open brow and the level eye of assured authority. There is an irritating tendency (one has seen it in the early history of most parties) to assume that decent motives and common intelligence reside solely within their own ranks. Suspicious of monopolies, they cherish a behalf in their own monopoly of commonsense ; and sometimes it takes the more fantastic form of an almost Islamic fanaticism, a hastily muttered creed that there is one economic way of salvation and one Prophet.

In the superior hierarchy of the faith, somewhere between the persistent cerebration of Mr. and Mrs. Sidney Webb and the hoarse-voiced idealism of the *Daily Herald*, Mr. Ramsay MacDonald has for long occupied an honourable position. His powers of speech endeared him to the dark masses of the rank and file to an extent unattainable by the busy type-writers, the Intellectuals, whilst a steady stream of little text-books on Socialism demonstrated that he also was among the prophets. A visit to India was followed, as it so often is, by a complete grasp of Indian problems ; and Mr. MacDonald added to the widening circle of his admirers that curious group of inverted Jingoes for whom the British Empire is a place upon which the sun is perpetually setting, and no Englishman, if he has committed the supreme indiscretion of entering the service of his country, can do right. The War added a more questionable contribution to his record although it afforded to him (as to so many others in number but perhaps more useful capacities) the opportunity for a demonstration of high courage.

Himself a queer blend of conflicting elements, he is, says Mr. Guedella in the *Manchester*

Guardian, an apt leader of a party which is as fascinating an amalgam as Burke's tesselated pavement. He brings to the work a sense of dignity: and one can only hope that he will succeed in importing to his friends a sense of proportion. One can never forget that, when a caricaturist of genius committed the supreme offence of depicting the Labour Party more as a human—all too human—being with a rather unsatisfactory moustache than as a young man or woman of divine beauty and superhuman size, the *Daily Herald* charged him with bad taste, and that the accused of Mr. George Lansbury was Mr. Max Beerbolhm.

Baroda's Educational Progress.

The annual administration report of the Education Department of the Baroda State for the year 1921–22 has just been issued, from which we reproduce the following extracts :—

The number of educational institutions rose from 2,797 to 2,814 and the number of pupils from 198,816 to 203,965 during the year under report, and the Government note with gratification, the increase in the number of pupils. This increase is attributed to the additional facilities afforded to the public by opening new institutions, strict supervision in the enforcement of the Compulsory Education Act and favourable conditions due to good harvest and the absence of epidemics. The percentage of boys and girls attending schools was 85·9 and 50·5 respectively, of the total number of children of school-going age. The percentage of school-going children to the total population was 9·6.

The total expenditure of the department amounted to Rs. 29,43,403–13–2 against the Rs. 25,42,031–8–4 in the preceding year, while the total receipts amounted to Rs. 1,71,034 against Rs. 1,59,670 in the preceding year. The net expenditure on English education amounted to Rs. 4,39,388 during the year, bringing the net average cost of educating each pupil to Rs. 36–13–11. The net expenditure on vernacular education amounted to Rs. 21,65,295 against Rs. 17,93,608 of the previous year, bringing the average cost of educating each pupil to Rs. 11–5–1. The cost of inspection and administration amounted to Rs. 1,30,244 against Rs. 4,49,513 of the preceding year, the decrease being due to the amalgamation of the two divisions of the Baroda district. The net cost of educating each pupil at the College, Baroda came to Rs. 269 against Rs. 281 in the previous year, the increase in the number of students by over fifty having brought down the cost. The expenses on all the training institutions for men amounted to Rs. 1,10,228 and that on those for women to Rs. 26,742, indicating an average cost of training each pupil at Rs. 245 for men and Rs. 318 for the women. The total expenditure on the Boy Scout Organization by the Government, apart public donations came to Rs. 18,548.

The number of secondary schools decreased from 69 to 64 and the total number of students learning English was 13,463 including 330 girls. The total number of vernacular institutions came up to 2,748 showing an increase of twenty-three over the previous year. The total number of pupils increased from 1,86,611 to 1,91,402. There were one training college at Baroda giving the full course at Baroda and three classes at the district head-quarters providing one year's course, where 449 men teachers were under training, eighty-four women were under training at the Training College for Women, at Baroda. The "Kalabhavan" College of Technology at Baroda had 470 students showing an increase of 110 students. The Government notes with pleasure the increase in the number of Baroda State students from 85 to 150.

The number of Urdu schools was 124, including 28 for girls. The total number of Mahomedan children receiving education was 15,923 showing an increase of about 2,000 students. The students of the four Kaliparaj Boarding Schools showed such satisfactory progress in their study manners and habits that it was thought advantageous to bring them in touch with the students of other communities by combining the boarding schools with the day schools at Vyara, Songadh and Mahauva. There were 221 schools for the Antyaj (untouchable) boys and girls and the total number of Antyaj children receiving vernacular education was nearly 13,000. Four boarding schools, one in each district providing free board, lodging and clothing, were also maintained.

The International Cotton Federation estimates the consumption of American Cotton in the present season at 11½ million bales. The world consumption in the first half of the 1923–24 season comprised 5¾ million bales of American, 2¾ million bales of Indian, and 600,000 bales of Egyptian Cotton.

Co-operation in Ireland.

The Free State and Ulster Agricultural Organization Societies are fully alive to the weakness of the co-operative movement in Ireland, and to the magnitude of the task that must be accomplished before the farming conditions in that country can be comparable to those in Denmark.

Nevertheless, the success that has been achieved in certain districts, and the strong position of the most progressive societies in spite of the effects of the political troubles, inspire hope and optimism in circumstances which might well excuse hesitancy to renew ardent missionary work.

The officials of both societies are preoccupied with plans for the future. They understand, above everything else, that propaganda from above is not sufficient to develop agricultural co-operation throughout the industry. They see the need for such a reform of rural education as will endow the coming generation of farmers with a wider outlook, qualities of initiative and enterprise, and a basis of scientific and hygienic knowledge.

Bridging the Gulf.

Under the old regime there was little association between Sir Horace Plunkett's organization and the State Agricultural Department. To-day the separating gulf appears to be bridged, and there is a fair prospect that the Agricultural Organization Society will be able to shape its own educational programme as part of a general plan in which the Government Departments of Agriculture and Education will combine. In Ulster a similar combination of effort is projected.

Having regard to the enormous amount of butter, bacon and eggs which Ireland sends to this country, the aims of the leaders of the co-operative movement have a special interest for British consumers. At present the 600 creameries are the mainstay of the movement, but it is not claimed that anything approaching an Ideal product is sent out from many of them.

Difficulties arise from the fluctuations of the milk supply and the variations in its quality, and the management in some cases is not first-class because of the lack of adequate training facilities.

The Remedies.

The remedies needed are clearly seen. Future effort will be directed to the creation among the farmers of a keen sense of loyalty to their co-operative societies, so that they will not "let them down" by sending unclean milk, or suddenly restricting supplies because some rival private creamery has offered a temporary increase in price.

In the educational propaganda the possibility of an immense improvement in dairy stock and milk yield by co-operative effort will be stressed. The need for a much higher general standard of efficiency in management will be constantly discussed, so that the importance of obtaining a uniform standard of purity by the perfect pasteurization of cream may be generally realized.

Closely associated with this question of efficient management is that of centralized selling. At present many of the creameries dispose of their produce through the Irish Co-operative Agency, which was established on the model of the great Danish Selling Society, but by far the larger number hold aloof.

Question of Brand.

One reason is that some of the managers who produce the best butter do not like to send it to be sold along with an inferior supply. The consequence is that the Co-operative Agency cannot hold a sufficiently strong position to command the highest possible market price, as the Danish Society can, while the financial position of the creameries is weakened by the excessive competition among themselves for the favour of merchants.

If the national brand is established, the position of the Central Selling Agency should be greatly strengthened, and if it can combine together all the creameries which secure the right to use the brand a great step forward will have been made, both from the point of view of the farmer members of these creameries and of the British consumers.

Most Hopeful Development.

The legislation projected in both the Free State and Ulster will do much to improve matters, by imposing penalties on exporters who send out stale eggs as fresh. But compulsion alone cannot be a complete remedy, and the most hopeful development is the establishment of egg-collecting societies, linked up in a national selling and exporting society (to deal with both the home and British trade), which will regulate sales by scientific preservation on a big scale during the surplus seasons.

In other departments similar creative activity will be seen.

The development of more bacon factory societies in Ireland is bound to come and with it will grow up a movement for improving and standardizing the quality of pigs.

In other ways, if present tendencies are not diverted by fresh political turmoil, the co-operative spirit will be fostered in rural Ireland, and the Governments, the organizations societies, and the Farmers' Unions will combine to drive home to the people in the country's staple industries the lesson that maximum prosperity can only be attained by the most complete development of co-operation.

Village Life in Montenegro.

A correspondent in the *Observer* writes :—"I am told, whether truly or not, that until I arrived recently no English man or woman had ever visited Shekula. By mistake, by ill-intent or, as the gendarmes later explained, through fear of meeting an old enemy on the proper route, the guide who was taking me from Ipek to Andrievitsa discovered, towards dusk, that we must put up for the night at Shekula, a tiny hamlet about twenty miles from Andrievitsa, consisting of perhaps a hundred houses, little more than huts, scattered untidily about the hillside. Only the roughest possible little track leads to it, and within it there is nothing resembling a road. When I arrived at the inn, still known here by the Turkish name of "hahn," it seemed that the whole village had collected there to see the stranger, and the noise and evil smells were so overpowering that it was difficult to face the prospect of spending a night in it. But, owing to the kindness of the local gendarmerie I was spared this and allowed to sleep in their clean and well-ordered little office.

"I spent the greater part of the next day in the village and found it a strangely depressing lifeless place. In spite of its surroundings of glorious wooded hills and fertile land, there was something of the sordidness of slum life in it. Although they do the greater part of the work, many of the women, as well as the men, appeared content to sit for hours in the bare, ugly, little inn, doing nothing, hardly even speaking. Housework is unnecessary where there are practically no household goods, and cooking, too, when the principal articles of diet are sour milk and cheese. Vineyards do not exist, and the land in general is little cultivated. The peasant's only interest appears to be the plum-trees, on which he depends for the "rakia," or plum spirit, which is one of his few joys. Although in neighbouring districts, especially that of Ipek, amazingly beautiful hand-weaving is done, carpets and all the fabrics in common use still being made by hand, in Shekula they neither toil nor spin, and one sees only the cheapest of imported fabrics, bought in the nearest market town.

"Years ago an attempt was made to build a church in Shekula, but for some reason or other it was not completed, and remains less than half-built, close to the rough little graveyard, where most of the graves are marked only by unhewn pieces of rock without inscription. In the graveyard I met a poor demented woman who told me that her husband and children and all her relatives were there. She seemed to feel that she must spend her time with them, and wandered about kissing the gravestones in a pathetic way.

"It is true that there is a school, but it is poorly attended, the children being kept away to look after the stock."

"Andrievitsa, which I reached to-night, appears by contrast quite a flourishing village but throughout Montenegro one sees little evidence of a desire to break away from old habits and to join in the more progressive movements in Yugoslavia."

The April stocktaking results of 60 Lancashire cotton-spinning companies, which have a total paid-up ordinary share capital of £7,456,250, and control 6,123,696 spindles have just been announced, and in 38 cases, the return to shareholders has been nil. The remainder, however, have made distributions ranging from 2½ to 20 per cent per annum requiring £82,160. An average dividend of 3.43 per cent was paid by 38 companies for three months, compared with 3.50, 3.81, 4.51 and 4.60 respectively for the four previous quarters. Two concerns declared 20 per cent, five 10, one 8, six 5, one 2½ and 23 nothing at all. In the case of 22 firms, whose reports relate to the half year, two paid 20 per cent, one 10, one 5½, three 5 and the remaining 15 nil. The average was 320 against 3.59 in October and 4.23 twelve months ago.

I must say that there are too many strikes in England.—*Signor Nitti.*

Views and Comments.

By Economicus.

The Government of India is to be congratulated on the commendable speed with which they propose to carry out the recommendations of the Tariff Board. The Board has made out a very good case for the protection of the steel industry, but this, as H. H. the Aga Khan points out in a recent issue of the *Times*, need not create consternation in British industrial circles. "The measure," to quote the words of His Highness, "is not a bludgeon to strike indiscriminately at the import trade, but a rampart behind which the Indian steel industry can be firmly established within the next few years." After pointing out that the British share of the iron and steel trade with India is not so great as in pre-war days, owing to the severity of Belgian and other competition, we are told that the extension of steel production in India will mean an increasing demand for machinery plant, and other products of the highly organized British engineering industry and that a large range of steel goods and railway material and almost all classes of machinery and hardware escape the proposed protective taxation, on the ground that they are not produced in India. His Highness has done well to appeal to the selfish instincts of British firms by pointing out that "the highly educated and scientifically trained British workmen of to-morrow will find an unlimited market for finished articles in a prosperous and contented India". It is our firm conviction that the relation between Britain and India is to be broad-based on more solid and just foundations than the selfish exploitation of one race by another.

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Writing on the subject of the Indian Labour Problem, a recent issue of the "Near East" points out that the educated classes have so far contributed words rather than work and proceeds to say—"They overlook the fact that workmen are human beings and they put far too much trust in mere mechanical adjustments, such as tariffs, railway rates, and the like, and they have not yet realized that for a solution of their difficulties they must look closely into hearts rather than schedules." It seems to us, however, that in the present condition of world competition external aid and internal reform are *both* necessary and should be complementary. We agree with the writer that the "old industrial system pivoted on the whip and that artizans of all grades were kept down to the base level of subsistence, and could not hope to rise by their own efforts, but to provide the necessary incentive, they were beaten into some semblance of efficiency". After pointing out that the policeman has taken the place of the lash at the present time, the writer concludes—"What is wanted now is a definite impulse towards a higher standard of living. The corner stones of the new India they hope to build must be wise spending, working to spend, and saving now to spend later on." Self-reliance and self-assertion, characteristic of Western labourers, are woefully lacking in India, and besides aiming at a higher 'standard of living', the workmen should cultivate those habits of mind; while the employers and the State should explore all possibilities for providing decent conditions of work inside and outside the factory.

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In the course of the debate on the same subject Sir Basil Blackett made a reference to the limitation of Capital in India and said that this year they were able to avoid sterling loan and their policy should be not to borrow in England, but in India. We quite agree and hope that Sir Basil himself and his successors in office will act on that principle and avoid the pressure, if any, exerted by financiers in London. Speaking on the subject of foreign capital Sir Basil said that it was a danger only if it exploited the resources of the country into which it came and at the same time killed internal competition, preventing the establishment of indigenous industries. We wish to point out that the Indian fear is not due to sentiment alone but to the conviction that sooner or later the unrestricted use of foreign capital tends to develop the danger described by the Finance Minister.

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The recent deliberations in the Indian Legislative Assembly on the subject of Steel Protection Bill are notable in many respects, but the most curious was the mentality they revealed of a certain section of the House. One member, for instance, had his suspicion about the Bill as it came from a Government which had done nothing to foster industries; in fact, he said, his suspicion was thickened by the manner in which the Government had hugged all the proposals of the Tariff Board. This view is no doubt most unreasonable, but it seems to us that the Government has itself to thank for creating such an impression.

Books in Brief.

Short Reviews of Recent Books.

The Problem of the Rupee.

By B. R. Ambedkar, M.Sc. (Econ.), sometime Professor of Political Economy at the Sydenham College of Commerce and Economics, Bombay. Published by Messrs. P. S. King & Co., Ltd., Orchard House, 2 and 4, Great Smith Street,- Westminster, London. Price 15*sh.* net.

Rarely has it fallen to our lot to read a book so refreshingly frank as this one by Mr. Ambedkar. Mr. Ambedkar has the courage of his convictions and has written it with an outspokenness that does him credit. His arguments and proofs may not be always acceptable to the general reader or to the specialist, but his general conclusion is, in its essence, perfectly sound. "Safety lies," he concludes his work, "in an inconvertible Rupee with a fixed limit of issue." There is much to commend this view. Incidentally Mr. Ambedkar examines with care the process by which the gold standard came to be the Gold Exchange Standard. His criticism in many places of men and measures in the domain of Indian Finance is by no means sparing but we cannot say that it is at all of the carping kind. Professor Edwin Cannan, Professor of Economics at the London University School of Economics, writes a preface which deserves to be widely read in this country and inwardly digested both by the Government and the people. Professor Cannan sums up his remedy thus :—"A much more practical way out of the difficulty is to be found in the introduction of the gold currency into the East. If the East will take a large part of the production of gold in the coming years, it will tide us over the period which must elapse before the most prolific of the existing sources are worked out. After that we may be able to carry on without change or we may have reached the possibility of some better arrangement." He anticipates the objection of the croakers in India and England and adds :—"This argument will not appeal to those who can think of nothing but the extra profits which can be acquired during the rise of prices, but I hope it will to those who have some feeling for the great majority of the population, who suffer from these extra and wholly unearned profits being extracted from them. Stability is best in the long run for the community." Will those in power listen ? And will those who have the country's good at their hearts appeal for this rational and sane view ?

Petroleum Resources of the World.

By Valentine R. Garfias, Petroleum Engineer, U. S. Bureau of Mines. Published by John Wiley & Sons, Inc., New York, London. Messrs. Chapman & Hall, Ltd. Price 15*sh.* net.

This is an excellent and handy record of concisely drawn up facts and figures, with maps, relating to the productive and prospective oil-fields of the world. It is written by a writer thoroughly conversant with the subject as an Engineer and one-time official dealing with Petroleum production and producers. The subject is dealt with in a manner which shows first-hand, personal grasp on the part of the writer of his subject. We do not propose to go into a critical examination of the contents of this publication. We will only add that India receives fairly full attention. Burma, Assam and Punjab claim space in it. Among prospective fields mentioned are those at Calicut and Alleppy on the West Coast, and Khatan in Baluchistan, where operations have been suspended. The Khatan oil is said to have a gravity of 11° Bé. and is said to be separated from the accompanying water with great difficulty. At Calicut and Alleppy, the oil is said to exude from mud-banks. This section closes with information relating to petroleum legislation. The book deserves to be not only in the hands of prospectors and investigators, but also in at least every decent library in India for reference purposes.

The International Jew

And three other Publications. Published by the Dearborn Publishing Co., Dearborn, Mich., U.S.A., 1920 to 1923.

These four Volumes deal with the Jews in America, their activities, their influences in American life, and some of the aspects of their power in the United States. It is claimed for them that they are written with no passion or prejudice, and with a view that the reform of the Jew must come from within. It is also stated repeatedly that only facts are published in these volumes about the Jew and no more. The Jew is a problem in Europe and America. We note a quotation in this book which suggests that as the Jew is found almost everywhere in the world, and as everywhere

he is not liked, there must be something internally wrong in him. The Jews in India number some 21,000 and are found only in parts of the Bombay and Madras,—Colaba and Cochin. They are *not* hated in India, which shows either that the people of India are tolerant to those of other faiths or that there is nothing in the Jew to raise the ire in the Indians amidst whom he has lived for centuries now. The American critic seems, therefore, far from the truth when he speaks of the Jew having something extraordinarily sinful in him. The fact seems to be that the Jew is both clever and possessed of organizing ability and as such can hold his own against the peoples of the West. His merits are thus his demerits. He will persist to live as he deserves to, despite the campaign against him. It is a saying in the Western countries, if a great endeavour is achieved, the man responsible for it should possess Jewish blood in him! Lowell prided himself on his Jewish parentage and Disraeli's well-known rebuke to a person who jeeringly referred to his Jewish origin is too well known to be quoted here.

Year-Book of the Department of Agriculture, Ceylon.

Published by Messrs. H. W. Cave & Co., Colombo.

This Year-Book has been issued under the authority of the Director of Agriculture, Peradeniya, Ceylon. It is, as in the past year, full of useful information. There are, in addition, as many as 26 illustrations, 4 of them being devoted to coconuts in which we in this State are greatly interested. The note on "Abnormalities in Coconuts" is worthy of study; so also are the observations on the nut-fall of coconuts. The cultivation and extraction of sisal, to which we have frequently referred to in these pages, will be found valuable. People in some parts of the State (near about Nanjangud) will find the note on plantain root beetle borer helpful. The account of the Indian glow-worm, our old familiar friend, is quite interesting. Altogether this issue of the *Year-Book* is excellent and ought to be welcome to many on this side as well.

Illustrated Guide to the Federated Malay States.

Edited by C. M. Harrison, Malayan Civil Service. Illustrations in colour by Mrs. H. C. Barnard. Published by the Malay States Information Agency, 88, Cannon Street, London, E.C. 1. Price *sh.* 2–6*d.* net.

The F. M. S. deserve to be congratulated on their *Illustrated Guide*, both the letterpress and the illustrations being well done. Mrs. Barnard's pictures are superb to a degree. We like best—of all the illustrations in this book—her picture of "A Coast Village," which for its realistic effects is hard to beat. It is a speaking picture, if we may so put it. The F. M. S. is the "other home" of the South Indian, as it may be fittingly called and as such this book ought to be widely welcomed. For conveying a comprehensive idea of the *Guide*, we should like to add that it covers a wide field and includes a description of the country from North to South; notes for travellers; hints for motorists; big game shooting; museums; mining; and appendices including a glossary, reliable essential statistics, list of rest-houses, fees for sporting licenses, etc., etc. The map in the pocket of the *Guide* is an excellent one and quite worthy of the publication.

A Factor in India's Progress.

By George Pilcher, B.A. Messrs. Longmans Green & Co., Calcutta, Bombay and London. Price Re. 1.

Evidence given before the Indian Tariff Board as to the effect of cheap steel on the future commercial progress of India. Mr. Pilcher is against the imposition of tariff duties. One side of the case is powerfully summed up.

Topics in the Journals.

(1) *The Malayan Agricultural Journal* for March 1924.—(*a*) Illite Nuts and Borneo Tallow. (*b*) Lemon Grass Oil.

(2) *American Silk Journal* for March 1924.—How Artificial Silks are Made.

(3) *The Journal of the Ministry of Agriculture*, April 1924.—Agriculture and Horticulture at the British Empire Exhibition by Sir L. Weaver, K B.E.

(4) *International Review of Agricultural Economics* for April–June 1924.—(*a*) The Formation of Small Holdings in Sweden by W. I. Peterson. (*b*) The Higher Finance of Agricultural Co-operation in India by H. Calvert.

Acknowledgments.

Baroda Administration Report—1922-23, *Times* Press, Bombay.

British Empire Exhibition Guide to the Agricultural Exhibit, in Gallery II. Department of Ministry of Agriculture and Fisheries.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

Vol. X. AUGUST 1924 No. 8

The Dawes Report.

The Dawes Report issued by the first of the two Committees of experts appointed in December 1923 to investigate certain phases of the reparation problem constitutes not only a valuable contribution to its practical solution but also a veritable mine of information as to the evolution of the present economic situation in Germany. In the space here available it is possible, however, to give only a brief outline of the scheme put forward with the object of securing payment by Germany of the maximum sums which can be transferred to the Allies without impairing her economic productivity.

Besides this guiding principle, various general considerations have been in the minds of the experts in framing the report. In the first place the restoration of the fiscal and economic unity of the Reich is insisted upon as an essential to the successful prosecution of the scheme, but it should be noted that this prerequisite does not necessarily involve the complete withdrawal of military occupation. Secondly, any existing sanctions which tend to hinder German economic activity must be raised or modified so as to remove all obstacles to German recovery. The recognition of these requirements leads the committee further to suggest various measures, which are mentioned below, for the protection of German economic life, with particular reference to conditions in the exchange market. Next, the scheme must be regarded as an indivisible whole, to be put into operation or rejected in its entirety, each separate recommendation being inter-dependent and success being unlikely for one without the co-operation of all the others.

As the basis of Germany's liability the committee accepted the dictum of the Treaty of Versailles that the burden of taxation should be at least as heavy in Germany as in the Allied countries. At the same time the reparation problem is recognized to be of a dual character, comprising the questions not only of the taxpayer's capacity to pay, but also of Germany's ability to transfer real values across the boundaries of her own territory. Hence while attempts are made to provide adequate and productive security for payment by a system of control, machinery is to be set up with the object of preserving German exchange stability. In the formation of the plan the experts have recognized the political elements of the problem only so far as they limit the possibility of securing the adoption of the scheme, and on the other hand they have had in mind the principle that a condition for the successful solution of the problem is the acceptance of their recommendations in good faith by the German people. The key note of the report is contained in a single sentence. "In the last resort the best security is the interest of the German Government and people to accept in good faith a burden which the world is satisfied to be within their capacity, and to liquidate as speedily as possible a burden which is and should be onerous."

The New Bank of Issue.

The internal measures suggested by the committee are designed to secure currency stabilization and fiscal reform. The principal means to the former end lies in the establishment of a bank of issue, arising either from a reorganization of the Reichsbank or from the setting up of an entirely new institution to absorb the Reichsbank, the Rentenbank and the Gold Discount Bank, having a monopoly of note issue for fifty years and

supplying a uniform currency to replace the existing multifarious circulating media. The notes would have a 33⅓ per cent legal reserve of gold and gold deposits in recognized foreign banks, they would be unlimited legal tender, and, while not at first convertible owing to the abnormal conditions ruling, would become redeemable as a permanent feature of their quality. Three-quarters of the capital of 400,000,000 gold marks would be subscribed in gold or foreign bills at their gold value in Germany and abroad, and shares for the remaining 100,000,000 gold marks would be issued to represent the assets of the Reichsbank. The management of the bank would be in the hands of a German president, a managing committee, and a general board of seven Germans and seven foreigners, the board being charged with preserving the interests of the creditor nations. A commissioner, one of the foreign members of the board, would be appointed to secure adherence to the rules of note issue and reserves. The bank would act as a central institution, rediscounting good-class, three-name or collateral commercial paper of not more than three months' usance. It would be the depository and fiscal agent of the Government and might make advances to the Government to a limit of 100,000,000 gold marks outstanding, and for not more than three months. It would also have power to deal with the public, making short-term commercial loans and discounts, effecting transfers and receiving deposits. In addition to its note reserve a 12 per cent gold reserve would be required to be held against deposits, augmented by a 30 per cent backing of specified short-term liquid assets. A graduated deficiency tax would be imposed on any amounts by which the actual reserves fell temporarily below the statutory minima. In many of these provisions the influence of the Federal Reserve system is clear, in particular with regard to reserves, maturity of discounts, deficiency tax, and powers and status of the commissioner.

The fiscal measures proposed involve first an international loan of 800 million gold marks, partly to assist in the foundation of the bank of issue, partly to prevent an interruption of essential deliveries in kind and to provide for that portion of the occupation costs which represents expenditure in Germany, and partly to assist in creating the confidence which is essential for the success of the scheme. It is estimated that in 1924—25 the ordinary budget should balance, but no Peace Treaty payments can be made out of budget resources. Out of the 1925—26 budget, augmented by the sale of railway preference shares, a net amount of 250 millions should be available for Peace Treaty payments, and in the three following years out of budget resources alone maxima, subject to some modification according to actual results, of 110,500 and 1,250 millions respectively would be payable, the last sum representing the standard for future years. In order to meet these charges it is suggested that the burden on the wealthier classes in the form of income-tax has so far been inadequate and that recent assessments might well be reviewed and liabilities reassessed on a gold basis ; that a higher tax might be levied on those who, by reason of pre-inflation debts paid off at a low valorization, have benefited by the currency depreciation ; that the financial relations between the Reich, the States and the Communes should be reorganized on a more provident basis ; that a larger revenue should be secured from tobacco manufacture and sale ; and that indirect taxes generally should be increased, turnover tax reduced, and death duties raised.

The Schedule of Payments.

In deciding upon the programme of reparation the experts have held the view that normal economic conditions should be reached in Germany by 1928. Consequently full reparation will not be payable until the fiscal year 1928—29. Apart from the payments out of budget resources already mentioned, various schemes for raising further contributions are advocated. In the first place, the railways are to be handed over to a joint stock company to be worked with a view to making a fair return. On a capital cost basis estimated at 26 milliards the company is to issue to a trustee appointed by the Reparation Commission 11 milliards of first mortgage bonds, guaranteed by the German Government, carrying interest at 5 per cent per annum with 1 per cent for sinking fund. Full provision for these payments, however, will not be required before 1927—28, the amounts being lower in the earlier years. The capital will consist of 2 milliards in preference shares, one-quarter of which will be sold for the benefit of the German Government, a moiety being available for reparations, and the remainder for the company, and of 13 milliards in ordinary shares to be issued to the Government. The proceeds of the tax now levied on gross receipts from freight and passenger traffic will be paid

by the new company to the Reparation Commission. The second instrument for the payment of reparation takes the form of Government guaranteed first mortgage bonds, to the amount of 5 milliards, secured upon German industry, banking and commerce, and bearing interest at 5 per cent with a 1 per cent sinking fund charge. These mortgages are to be the individual obligations of the several concerns and are to be delivered by the German Government to a trustee appointed by the Reparation Commission, who will collect the proceeds, handing them over for the benefit of reparation, and disposing of them if and as ordered by the Commission. The sinking fund will not begin to operate until the fourth year, the interest payable in the preceding years being nil, 2½ and 5 per cent respectively.

Deliveries in kind are not to be entirely suspended, but will be limited in the first two years by the available financial resources, and it is recommended they should consist of natural products of Germany or of exports which do not entail previous heavy importations of materials. Apart from these essential deliveries in kind, the payments proposed are to be regarded as comprising all the charges arising under the Treaty, including reparation, restitution, occupation costs, certain clearing house liabilities, and expenses of commissions of control.

The payments may now be conveniently tabulated as follows :—

Summary of suggested Reparation Payments to be made by Germany under the Dawes Scheme 1924—1929.

(In millions of gold marks)

Source	1924-25	1925-26	1926-27	1927-28	1928-29
Budget	..	..	110	500	1,250
Transportation Tax..	..	250	290	290	290
Railway Bonds ..	200*	595*	550	660	660
Industrial Debentures	..	125	250	300	300
Sale of Railway Shares	..	250	..	..	..
External Loan ..	800	..	..	..	..
	1,000	1,220	1,200	1,750	2,500

* Figure for 1925-26 includes balance of 130 million gold marks from first year.

The standard payments in normal years are capable of modification on two separate grounds. From the year 1929—30 a supplementary sum will be payable, varying with movements in a composite index of prosperity. This will be based upon statistics of railway traffic, population, foreign trade, consumption of sugar, tobacco, beer and alcohol, budget receipts and expenditure, and consumption of coal, as compared with averages computed for a series of years. For each complete ½ per cent rise in the index a proportionate addition shall be made to half the standard in the years 1929—30 to 1933—34 and to the whole of the standard thereafter. In the event of a fall in the index below the base the standard payment will still be made, but subsequent supplementary payments shall not occur until the deficiency has been allowed for. A further modification is permitted in the event of changes in the general level of commodity prices expressed in gold. Whenever, by the decision of an impartial expert, a variation of 10 per cent or more has occurred in the purchasing power of gold, both the standard and supplementary payments shall be increased or reduced accordingly.

CONTROL OF COLLECTION AND REMITTANCE.

It is now necessary to consider briefly the instruments by which control is to be exercised over the various sources of reparation receipts and the transfer of the proceeds for the benefit of creditor governments. In the first place, all payments on reparation account will be made into the projected new bank of issue to the credit of the Agent for Reparation Payments, an official to be appointed by the Repatation Commission with the function of co-ordinating the activities of various commissioners and acting as liaison officer between them and the Commission. There are to be commissioners of the bank of issue, the railways and the controlled revenues, and possibly for the industrial debentures, the duties of these offices being of a supervisory or surveillance character. Taxes on tobacco, alcohol, sugar and beer, and customs revenues are to be set aside specifically, except as regards the surplus over the stated amount, for reparation payments, and each item is to be allotted a sub-commissioner subordinate to the Commissioner of Controlled Revenues. A Trustee is to be appointed to receive and administer the railway and industrial bonds, to ensure their service out of sums made over by the Agent for Reparation Payments, to fix the conditions of amortization and redemption and if so ordered by the Commission to sell the bonds remaining in his possession. A co-ordinating board will be formed, consisting of the Agent, Trustee and all the Commissioners or their representatives, to have advisory powers and to supply information to the Agent-General.

Perhaps the most interesting part of the machinery to be set up for the execution of the new programme, however, is the Transfer Committee, under whose direction withdrawals

shall be made by the Agent for Reparation Payments from the balance in the bank of issue. This body will consist of the Agent, as chairman, with five other members, each representative of an Allied or Associated power and well qualified in matters of foreign exchange. Its function will be to regulate the execution of the programme of deliveries in kind and to control the transfer of cash to the Allies, acting so as to secure the maximum transfer without bringing about instability of the exchange market. As soon as the limit of transferability has been reached the sums being paid into the reparation account will, of course, accumulate, and upto an amount of two milliards may be permitted to form part of the resources available to the bank for its short money operations. Thereafter upto a limit of three milliards, making a total accumulation of five milliards, the Committee will invest in bonds or loans in Germany. When the five milliards limit is reached the budget contributions for reparation are to be reduced so that receipts into the reparation account shall not exceed withdrawals therefrom.

Time alone will show whether this elaborate machinery of interdependent controls and agencies will work as smoothly as the ingenuity exercised in its construction would deserve. But it is generally agreed that the plan represents a step towards the regularization of reparation payments and the liquidation of the liabilities accepted under the Treaty of Versailles. Some criticism has been directed at the Dawes Committee on the ground that no attempt was made to fix the total of Germany's liabilities. This, however, is entirely groundless, since the Committee were never empowered by their terms of reference to inquire into that problem, which received an answer in May 1921 under the decision of the Reparation Commission and cannot profitably be reviewed until Germany's long-term capacity to pay has become capable of much more exact definition than is possible in the present state of flux.

One interesting feature of the scheme sounds an echo of the Genoa Conference, when the recommendation was made for the holding of a convention of central banks. These institutions are called upon under the scheme to act in an advisory capacity in the appointment of the various foreign experts, particularly in the formation of the Transfer Committee and of the general board of the bank of issue. Such a procedure should ensure that able and experienced representatives, distinguished by financial rather than political qualifications, will be given a place on these important bodies, and should therefore assist in the re-orientation of the reparation problem towards its governance by economic facts and conditions.

Progress of the Negotiations.

The reception, accorded to the report, gives ground for conservative optimism regarding the prospects of a European settlement. On April 11 the Reparation Commission unanimously approved the recommendations, having arrived at the decision that "they offer a practical basis for the rapid solution of the reparation problem." They further recommended to the governments concerned that the plan should "be brought into full operation without delay". In reply to a communication of the Reparation Commission the German Government expressed their willingness to collaborate in the execution of the scheme and have now been requested to forward detailed suggestions regarding the carrying out of the proposals.

The attitude of the several Allied Governments has been defined in their replies to the Reparation Commission's approval of the scheme. The British Government express agreement with the proposals of the committee and give full support to the recommendation to restore the economic and fiscal unity of the Reich. The Italian Government state willingness "immediately to adopt the experts' reports in their entirety, as well as the principles underlying them". The Belgian Government accept the conclusions contained in the reports "as a whole," but caution the Reparation Commission to give careful consideration to the practical details to be submitted by the German Government and express the hope that these details will be forwarded without delay for common agreement among the Allies. The French reply is not so unequivocal. It notes that until the Reparation Commission have worked out the full details of the scheme the Allies cannot arrive at the conclusions necessary to bring the plan into effect. But it further suggests that the governments "will have to consider together under what conditions the securities at present held by France and Belgium shall be merged into or exchanged for those which will be handed over as an undivided whole to all the Allies." This, it is held, cannot take place until Germany has effectively put the plan into execution. Only then can the governments determine what guarantees will be necessary.

Sir Asutosh Mukherjee.

By Sir B. K. Bose.

One of the noblest sons of India has passed away and his countrymen are in deep mourning for him. Just as he was elaborating his programme of work for his Motherland after being relieved of the responsibilities of official life and while yet in the zenith of his high intellectual powers, at one stroke the cruel hand of death has put an end to the vast accumulations of his life of incessant toil, his massive intellect and his wonderful organizing powers. It is one of the saddest tragedies of life. The sole consolation for his sorrowing countrymen is that the inspiration of a divinely gifted life like his can never die. True, the vital spark is gone, the virile voice is still but the legacies of his great deeds are still for us to profit by. He leaves for us the highest idea of selfless devotion to duty.

I came to know him when, in January 1904, he took his seat as a member of the Imperial Legislative Council. The Universities Bill had just then been introduced and immediately on his taking his seat, he was put on its Select Committee. Mr. Gokhale was already on it. They shared between them the task of voicing Indian views and representing Indian interests.

Mr. Gokhale's standpoint was somewhat different from Sir Asutosh's. Both united in opposing what they agreed in thinking were reactionary provisions of the Bill and most of us followed their lead. But while the former saw nothing good in the measure, the latter thought it was an advance on the then existing law and deserved a trial. As was pionted out by Mr. Raleigh, the member in charge, the Bill, as it had emerged out of the Select Committee, was "in large part his (Sir Asutosh's) work". All other considerations apart, in it was embodied his ideal of a University as set forth below: "A University is a Corporation of teachers and students banded together for the pursuit of learning and the increase of knowledge, duly housed and fitly endowed, to meet the demands raised in the achievements of its purposes.....In its establishment, the amplest powers that wisdom can suggest should be conferred upon it. In working out its intellectual salvation, the exercise of those powers should be vested in select bodies of fit persons, sufficiently small in number to be efficient, yet large enough in number to prevent degeneration into an intellectual clique, changing sufficiently from time to time to prevent dominance of merely personal policies, and representative enough to be in touch alike with the experience of the past and with aspirations for the future." And though not wholly successful in his efforts to attain this ideal, he was prepared to allow the great experiment to have a trial.

For two years after the Bill became law, the Calcutta University had failed to complete the regulations needed to put it in operation and in 1906, Sir Asutosh was appointed its Vice-Chancellor. The first duty that devolved on him was to make the necessary regulations. No less onerous, in fact much more so, was the task of remodelling the University. Whether, as Mr. Gokhale believed, the Act was meant to paralyse higher education, the fact remains that, thanks to the wonderful organizing capacity and intellectual acumen of Sir Asutosh, it was made to yield results which have transformed the Calcutta University into the most distinguished institution in the whole of India for post-graduate studies and research of a type, which has found recognition even in the European scientific and literary world. How this great work was accomplished within fifteen years of his placing himself at the helm is best told in his own words :—

"For years now, every hour, every minute, I could spare from other unavoidable duties, foremost among them the duties of my judicial office, has been devoted to the University work. Schemes to heighten the efficiency of the University have been the subject of my day dreams, into which even a busy man lapses from time to time ; they have haunted me in the hours of nightly rest. To University concerns, I have sacrificed all chances of study and research, possibly to some extent, the interest of family and friends, and certainly, I regret to say, a good part of health and vitality." As a reward for all his sacrifice, he had the satisfaction of seeing two of his graduates secure that most coveted honour, the fellowship of the Royal Society. Several of them occupy high positions in the newly created Universities of Dacca, Patna, Benares and Lucknow. Even Allahabad has not failed to avail itself of the alumni of Sir Asutosh's institutions. Sir Michael Sadler, President of the University Commission, said of Sir Asutosh that he had hardly met any distinguished educationist in any part of the world who could equal Sir Asutosh in

information regarding educational affairs and the ideals of different Universities of the world.

A comprehensive scheme for the housing and superintendence of the Calcutta collegiate student population numbering thousands and reform of legal education have gone hand in hand with the creation of the teaching University of Calcutta. The vernacular of the Province received under him an impetus to which there is nothing to compare since the days of Raja Ram Mohan Roy. The Bengalee Literature has a chair in the University and it is a compulsory subject upto the degree of Bachelor of Arts and Science. Private liberality, which has enabled much of this work to be done, has flowed in a copious fertilizing stream under his magic influence.

Angry controversies have raged round Sir Asutosh's post-graduate teaching arrangements. He was accused of "thoughtless expansion" of this one department to the starving of other departments. Whether the financial difficulties were the result of this expansion, or of the failure of Government to help the University, it is beyond my function to discuss. But the fact cannot be gainsaid that the work has been of an extraordinary character. Those who desire to have an idea how really extraordinary it is, should read Sir Asutosh's illuminating annual reports. He justified the staff entertained thus :—"We maintain a distinguished staff not solely with a view to communicate the existing knowledge to our young men but also to expand the boundaries of the domain of knowledge. We adopt as our motto : 'Search for the truth is the noblest occupation of man ; its publication a paramount duty." A word about the College of Science will not be out of place here. In this connection Sir Asutosh once said, "We have struggled for more than seven years to establish a University College of Science and Technology, which shall be the pride not of Bengal alone, but of all India. Two of the noblest of my countrymen have been unstinted in their liberality in the furtherance of this cause." And despite difficulties, which at one time seemed insurmountable, the College was soon an accomplished fact and now under the direction of that saintly Scientist, Dr. P. C. Roy, who in the evening of his life, when men seek for rest and repose, has preferred to devote his unrivalled knowledge and experience to guide the progress of this great national institution, it has by its beneficent work already justified the wisdom of its founder. It has brought forth a band of enthusiastic investigators, who under Dr. Roy's inspiration, have been able to create an Indian School of Chemical research, whose theses find place in the highest scientific journals of Europe.

Regarding the importance of higher teaching and research in the intellectual development of a nation, I quote the following eloquent words of Sir Asutosh :—"No nation attained to real eminence as a Nation, unless they maintained in a state of the highest efficiency and excellence their Chief Seat of learning, their most potent instrument for the discovery and dissemination of truth in all departments of human activity.....whatever detractors may proclaim, the fact remains that the University of Calcutta, at the present moment, possesses a teaching organization which notwithstanding its deficiencies, is engaged in the performance of a work of highest importance to the State."

I have been somewhat long on this part of Sir Asutosh's work, as I am anxious that my countrymen in these Provinces should realize their great responsibilities in connection with their newly constituted University. If they desire that it should attain in due course of time the ideal set before us by Sir Asutosh, they must extend to it their helping hand. Without this, it can never reach the full height of its usefulness.

Sir Asutosh's profound knowledge of law, his power of clear, concise and accurate expression and skilful marshalling of facts have made his important judgments master-pieces of their kind and it has been rightly said by the *Pioneer* that some of them have been classical. He will, without question, always rank as one of our greatest judges, a great educationist, a great lawyer—this is a rare combination. Sir Asutosh lived a life of our ancient *rishi*-like simplicity. For years he attended public functions in his national *dhoti*. He sat on the Sadler Commission in his national dress and travelled all over India in that dress.

He was deeply religious. But his religion lay in the performance of duty, but not in the ordinary sense. As our immortal *Gita* has sung, duty must be performed for its own sake and not for its fruits. Renunciation of the fruits of action was the moving force of all his public activities and it was this that endowed him with his fearless independence and undaunted courage.

Such Japanese import duties as were provisionally suspended after the earthquake have been re-introduced as from the 1st instant.

Growth and Policies of Labor Banks in U. S. A.

Opened within the last three and one-half years, there are now in the United States, distributed in thirteen states, twenty-two labor banks owned by labor unions, operated for the immediate benefit of the union members, and with accumulated resources of more than sixty million dollars. It was the immediate success of the second labor bank established, that of the Brotherhood of Locomotive Engineers Co-operative National Bank, opened in Cleveland, Ohio which convinced labor leaders of the soundness of this experiment and rapidly led other unions to offer banking facilities to their members and to function as a power in the creation of wealth and the control of credit.

Reviewing this striking departure in banking and in union activities Leroy Peterson, Cashier of the Amalgamated Bank, New York's first labor bank, writes in the New York *Times*:—

"Primarily the labor bank is set up on the general policy of increasing consideration for the small depositor. Even very small accounts are solicited. The Amalgamated Bank of New York, and, it is understood, other of the labor banks also are more and more developing the policy of making small character loans to their depositors, usually requiring one or two endorsers from among their fellow-workers. These loans are mainly under $300 and go where such money is as manna from heaven. Many thousands of dollars have been so lent, and to date the Amalgamated Bank of New York has met with not a single loss. Such service is a boon to the working person, the small depositor whom almost every other bank cannot afford to carry. But since the policy of labor banks is one of limited profits, and hence greater service, they can and do perform this usual function.

"And yet they are all successful, all making money. How? The answer to that question is so simple that it has probably escaped general attention. Unlike any privately organized bank, which must compete for its deposits, the labor bank has this advantage: It begins with assured resources in the form of immediate deposits, both from the funds of the organization by which it is controlled, and the enormous aggregate savings of its members. Labor banks assured of large deposits have therefore followed an ultra-conservative policy in the matter of their loans and investments. They have been able to afford to take a small profit, in the aggregate netting them a good return on their investment, which in the last analysis is the soundest banking practice.

"This may, in part, account for the unbroken record of success of all the labor banks. There is every reason to believe in the continued successful practice of this policy, for after three and one-half years of actual banking operations, all labor banks show a marked tendency toward investment banking rather than commercial banking. In other words, the function of labor banks would seem to resolve itself more and more into the simple matter of the conservative and safe investment of the savings of the workers. These investments also tend to be placed more and more in those industrial enterprizes which not only possess safety and security, but also have established policies sympathetic to the standards of American labor."

The writer concludes, after reference to such special services furnished by these banks to their clients as the development of banking by mail for the widely scattered membership of the Brotherhood of Locomotive Engineers and the transmission of dollars by the Amalgamated Banks to the friends and relatives of its depositors in Russia and Central Europe.

"Progressive labor leaders have come to this new type of action through long years of leadership and struggle in the fight for shorter hours and more pay. They have come to the conclusion that constant striving for shorter hours and more pay in itself is both unsound and uneconomic. The whole history of labor is one of wages ever mounting higher, yet never quite keeping pace with the cost of living. For instance, even though the worker received twice as much in wages in 1921 as he did in 1913, it cost him more than twice as much to live. He was really no better off. These labor leaders knew from their knowledge of economics, that the group which controls the credit resources of the country controls the destiny of the country. They capitalized this knowledge when, in the autumn of 1919, at a co-operative conference in Chicago, it was voted to establish throughout the country banks owned and controlled by labor. In the short period of labor banking operation there have been repeated instances of the truth of this economic axiom. Perhaps the most striking example is one that occurred in Cleveland in 1921. At that time a strike of the building trades was in progress. The carpenters, affiliated with the building trades group, were in the midst of erecting their own building. They were negotiating for a loan of $47,000 with which to complete the structure. Because they were on strike, they found themselves turned down by one bank after the other. They were ready to stop building operations and as a last resort appealed to the Brotherhood of Locomotive Engineers' Bank in Cleveland. The Bank, upon investigation, found them a solvent organization, and lent them the $47,000."

Agricultural Wages Enquiry.

The Labour Office has just published an interesting Report with coloured charts on an Enquiry into Agricultural Wages in the Bombay Presidency including Sind. This Report belongs to a series of reports on enquiries into the earnings of different classes of labourers in this Presidency and covers a period of 23 years from 1900 to 1922. 'The aim' says the Report,'was, in brief,to make a study of Indian agricultural wages, based on full and accurate statistics of wages paid in this Presidency during the period under review. It was hitherto impossible to have the data readily available, and to compare the rise in agricultural wages with the rise which has occurred in industrial concerns during a period which is notable for its rapid industrial and commercial progress.

'The attention of the Labour Office was also drawn to the fact by certain Members of the Legislative Council that enquiries into wages and hours of labour should not be confined as hitherto to industrial concerns only, and that such an enquiry as that now completed would be valuable from a practical point of view. It was pointed out that the International Labour Office had undertaken investigations into wages and hours of agricultural labour in foreign countries, and a collection of similar information in this Presidency would be of considerable value.'

The daily average wages are shown for three classes of agricultural labourers in two towns in each of the 26 districts of the Presidency. The statistics are classified according to urban areas and rural areas. 'Urban areas' mean localities in the immediate neighbourhood of district head-quarter towns, whereas 'rural areas' denote localities which are more typical of rural conditions in the real agricultural sense of the term. This classification helps to give an accurate idea as to wages in areas not influenced by a local demand from commerce or industry and in areas where the influence of administration, trade and industry considerably affect wages in agriculture.

Classes of Workers.

Agricultural labourers are divided into three main classes, *viz.*, (1) field labourers, (2) ordinary labourers, and (3) skilled labourers. Field labourers include plough-men, sowers, reapers, harvesters, transplanters and weeders. Ordinary labourers are estate coolies, earth-workers, canal and waterway silt clearers and those labourers who work as masons' or blacksmiths' assistants. Skilled labourers re the village artizans in rural areas and the carpenters, blacksmiths and masons who accept agricultural work in urban areas. The Report contains a fund of useful information in connexion with the numbers of each of these three classes of labourers at the two censuses of 1911 and 1921. The effects of the ravages of particular epidemics such as Plague in 1903 and Influenza in 1918 are vividly shown in coloured charts.

The mortality through influenza was appalling and is given for India as between 12 and 13 millions. The actual number of deaths which resulted from the epidemic does not give a true measure of its full effect. The case mortality has been estimated at 10 per cent of the number of attacks and, therefore, the total number of persons affected by the disease would be about 125 millions or two-fifths of the population of India. Other charts show the rise in wages, the output of cotton, oil seeds and foodgrains and the fluctuations in real wages.

Decrease in Field Labourers.

Taking the Presidency as a whole, the number of field labourers fell from a little over two and a half millions to one million six hundred and six thousand or 37 per cent in 1921 as compared with 1911. The greatest fall occurred in Sind where their number fell by 67 per cent. Ordinary labourers are employed on building and development undertakings, railway expansion and canal construction and each demand draws its supply by a sustained migration from pure agriculture. The number of ordinary labourers have therefore increased from 472,000 in 1911 to 585,000 in 1921 or by 24 per cent. There was no appreciable change in the number of skilled labourers.

Changes in Daily Average Wages.

A field labourer earning 3 annas a day in 1900 earned 9 annas in 1922 in areas in the proximity of the larger towns and 7 annas in localities uninfluenced by commerce and industry. The average daily wages of an ordinary labourer amounted to 4 annas 3 pies in urban areas and to 3 annas in rural areas in the year 1900. In 1922, these labourers earned 12 annas in urban areas and 8 annas 6 pies in rural areas. The wages of skilled

labour have not increased to the same extent as the wages of ordinary and field labour. The increase in 1922 over 1900 amounts to 149 per cent in urban areas and to 133 per cent in rural areas as against increases from 182 to 200 per cent in the case of ordinary and field labour. As regards real wages these have risen for all classes of labour in urban areas and for skilled labour in rural areas. The real wages of ordinary and field labourers in 1922 were lower than what they were in 1914 but were higher than what they were in 1900.

HOURS OF LABOUR.

Information regarding the hours of labour worked by ordinary agricultureal labourers in various parts of the Presidency was obtained from responsible officers of the Department of Agriculture. The outstanding fact is that hours of labour have decreased throughout the Presidency as compared with a decade ago. Agricultural labourers now work for about 8 hours per day as against 10 hours ten years ago, and the tendency is said in some areas to be for still shorter hours. Hours of labour in the North Central Division are usually from 7 a.m. to 11-30 a.m. and from 2 p.m. to 5-30 p.m. In the Konkon the labourer has been reported as commencing his work an hour late in the morning. In Kanara which is out of touch with large labour employing centres no marked change has been noticed. In Deccan the hours vary from tract to tract. There, men work about an hour longer than women. In Sind the hours of work are 9 to-day as against $10\frac{1}{2}$ a decade ago.

HOLDINGS.

The student interested in Indian economic conditions will also find useful data in the complete statistics in connexion with different sizes of holdings in all divisions of the Presidency for the two years 1916—1917 and 1921–1922. The number of holdings in the Presidency including Sind have increased by 3 per cent as compared with five years ago and the average holding has fallen from 15.8 acres five years ago to 15.4 acres at the present time.

The Report also deals with the Purchasing Power of the Agricultural Labourer. It belongs to a class of reports which Sir M. Visvesvaraya at the Indian Economic Conference in Bombay pleaded for—statistics set out so that readers may draw their own conclusions. The Hon'ble Mr. Phiroze Sethna in moving a Resolution in the Council of State on the Economic condition of the country referred to the same question. The Report can be purchased for Rs. 2-9-0 from the Labour Office, Old Custom House, Bombay or from the Superintendent, Government Printing and Stationery, Poona.

Sisal Cultivation.

MR. V. CANAGARATNAM, Acting Manager of the Experiment Station at Anuradhapura, Ceylon, writes on up-to-date lines in the Year-Book of the Department of Agriculture, Ceylon, for 1924, on "The Cultivation and Extraction of Sisal in Ceylon," where there are vast tracts of available land, especially in the dry zone at present lying unproductive. The problem of the economic utilization of this dry zone has been engaging the attention of the Department, and with this object in view trials were started with various fibres, including sisal hemp. Careful experiments have shown unmistakably that sisal can be grown successfully in these areas purely as a dry crop without resorting to irrigation.

It is interesting to note that during the prolonged drought which prevailed for over five months in Ceylon last year, it was noticed that almost 75 per cent of the leaves lost their succulency and healthy green colour and drooped down, unable to support themselves in their position at the stem. The plants, 33 months old, planted in the high land, were not affected and did not droop. Elsewhere, where the plants were affected, it was feared that they might receive a serious setback, but they recovered easily with the advent of the rains. Almost all the drooping leaves regained their former position and healthy dark-green colour. When the drooping leaves were harvested and machined it was found that the decortication was very unsatisfactory. Subsequently it was found that, by careful adjustment of the feeding board to the scraper, and with the speed in the working of the machinery run at a little below normal, satisfactory defibring can be obtained, though it involves a certain loss of fibre which cannot be avoided. Further, when the same drooping leaves were harvested and machined in December after the plants had fully recovered, the percentage of dry fibre was found to be much higher than that obtained six months earlier during the first harvest of the crop. A slight increase would be natural, but in this instance a marked increase was noted.

Papain.

By B. J. Eaton.*

Articles on "Papain, its production and uses" and "The Preparation of Commercial Papain" were published by the writer in the Agricultural Bulletin, Vol. II, No. 7, February 1914, pp. 190—192 and Vol. V, Nos. 5 and 6 February, March, 1917, pp. 202—203.

The information contained in the present article embodies that previously published, together with additional information from other sources and replies received from various firms in England, Canada and America which are interested in this product.

Source of Raw Products.—Papain is a proteolytic or digestive enzyme contained in the juice of the fruit and other parts of the Papaya tree (Carica papaya).

The commercial product, which consists of a cream coloured or white powder is obtained from the fruit of the tree.

Cultivation.—The papaya tree, as is well known, grows extensively in Malaya and other eastern tropical countries and other parts of the tropics, including tropical Australia and is grown largely for its fruit.

There are three kinds of trees (*a*) hermaphrodite or perfect flower, (*b*) female or pistillate, and (*c*) male or staminate. The trees are propagated from seed, which should be sown in a well prepared seed bed about ½ inch apart. The seeds should be covered lightly with soil and the seed beds should be well watered. The beds should be shaded and, if the seeds are sown during rain, the beds should be sufficiently protected to prevent the washing away of the seeds.

The seeds germinate in about 2—4 weeks and may be transplanted when about 3 inches high. The plants should be watered before transplanting and three fourths of the leaf blades should be removed to prevent wilting. The soil should be well pressed round the roots and the seedlings planted at about 10 feet apart. Cover crops may be grown on the land. Water should be supplied if the plants tend to wilt. The plants, however, will not tolerate a waterlogged soil. The trees begin to bear fruit after about one year and the fruit may be tapped to obtain the juice when they are three months old. Only mature, but not ripe, fruit should be tapped.

Cattle manure is applied largely in India in the cultivation of the tree. The following mixed fertilizer has also been found to be very successful in Hawaii—Superphosphate 800 lbs., sulphate of potashs 315 lbs., nitrate of soda 250 lbs., sulphate of ammonia 190 lbs., volcanic ash 445 lbs. Ploughing and harrowing during the early stages of growth, are also recommended in India.

If properly looked after, the plants may last for 5 to 10 years but the period of profitable production is said to be 3—4 years. Special fruits, varying in size and shape, can be produced by adopting suitable breeding methods.

Composition of Fruit.—Analysis of the fruit has given the following results :—

	Per cent.
Water	90.75
Protein	0.80
Oil or Fat	0.10
Nitrogen Free Extract	6.32
Fibre	1.09
Ash	0.94

The most important constituent is the digestive or proteolytic enzyme—papain.

Preparation of Crude Papain.—The juice, which contains the papain, is obtained by making shallow longitudinal incisions, about ⅛ inch deep, in the unripe but well-grown fruits, by means of a non-metallic knife (a bone or ebonite knife). Rustless steel knives will be satisfactory if it is found that they do not discolour the juice.

Fruits in which only three to four incisions are made simultaneously, can be incised again after a day or two but, if seven to eight incisions are made, subsequent tapping is said to yield very little juice or latex. The juice resembles a white thin sticky latex, which coagulates rapidly.

The fruits should be incised in the early morning and the juice strained through muslin and dried at about 35° C for two days, when it forms a cream coloured brittle mass with an unpleasant odour. The mass can be ground to a powder.

The juice should be collected in glazed earthenware or China cups. A trace of formalin added to the juice prevents decomposition. Small quantities of juice may be dried in the sun or sheets of glass. Large quantities, however, are prepared preferably by spreading the juice on

* Through the courtesy of the *F. M. S. Agricultural Journal.* We have published many articles in this *Journal* during the past few years but this one gives in one conspectus many particulars which are well worth having in one place. [Ed., M. E. J.]

linen trays made by stretching brown linen on wooden frames placed over a hot-air chamber of brick, avoiding excessive heat. This can be done by using an iron plate covered with 2–3 inches of sand between the fire and the hot-air chamber, with the trays about one foot above the place. Artificial drying in this way should be done below 100° C (below 40° C) ; on a large scale vacuum drying would be found to be very efficient. The juice contracts on drying and the contents of several trays can be placed subsequently in one to complete the drying. The juice should be dried till it is crisp and capable of being reduced to a powder. A cream coloured or white powder is obtained.

The yield of crude dried material amounts to about 16–18 per cent of the weight of the juice.

The yield per tree will depend on locality and amount of fruit. A tree with thirty fruits may yield 1 lb. of crude papain. A dozen shallow cuts about ½–¾ inch part on a fruit of good size will yield ½ oz. of papain.

One authority gives 0.4 lb. of fresh latex per tree while 40 fruits have yielded the same amount. In Ceylon the yield is from ½ to ¾ lb. of papain per tree. In India the trees are planted 400 to 500 per acre and the cost of cultivation, collection and preparation of papain is estimated at 200 to 250 rupees per acre.

Purification and Standardization of Papain.—The commercial product is said to be often adulterated with starches. The "activity" number (*i.e.*, the amount of protein digested in a fixed time at a definite temperature by unit weight of papain) varies considerably.

By Pratt's method (digestibility of casein from milk) commercial samples from Ceylon gave "activity members" from 0.5 to 9.7. Mexican samples have given 12.9 and West Indian samples 40.0. Philippine samples, prepared in the laboratory, of fresh latex (on dry basis) gave 45.8, undried latex (on dry basis) 45.4, alcohol precipitated papain 72.2 and Indian samples 44.4 on egg albumin.

(*Note.*—Pratt uses a 40 per cent solution of a sweetened, condensed, skimmed milk as substrate and a 0.5 per cent aqueous solution of papain.)

25 ccs of milk, with 23 ccs of water and 2 ccs of a filtered papain solution containing 5m. grams of papain per c.c. mixed and at the end of the digestion period (30 minutes at 40° C) the undigested casein is precipitated by adding 0.5 ccs of copper sulphate solution (6 per cent) followed by 0.5 ccs of glacial acetic, with vigorous stirring during the precipitation. The precipitated casein is broken up, washed on a filter, dried in an oven and weighed. A blank experiment is used as a control. This method has been adopted by subsequent experimenters in the Philippines, on account of its reliability and simplicity.

Brill and Brown of the Philippine Bureau of Science (The Philippine Journal of Science, Vol. 20, No. 2, Feb. 1922, p. 185) state that papain appears to lose its activity on keeping ; a sample examined by Pratt in 1914 which digested 85 per cent of the casein in milk in 30 minutes, had lost all its activity in 1921, although the dried material had been sealed up in small glass vials and protected from sunlight.

These experimenters found that alcohol-precipitated papain is more active than sun-dried papain. By dialysis of the milk (a 10 per cent solution of a dried milk powder was used, instead of the sweetened, condensed, skimmed milk employed by Pratt) to remove mineral salts, greater activity was shown.

These experimenters conclude that autolysis of papain takes place at temperatures as low as 0°C when the enzyme is put in water with toluene as an antiseptic. Sodium chloride shows first a slightly activating effect followed by an inhibiting effect in more concentrated solutions ; sodium carbonate and bicarbonate and calcium chloride, magnesium sulphate and boric acid have no marked effect ; potassium chloride and sodium citrate showed marked activation while acetic and lactic acids showed strong inhibiting effects.

The following method of purification has been applied in India :—20 grammes of fresh latex are stirred with 100 ccs of 95 per cent alcohol producing a white gummy coagulum. The alcohol is poured off and a further 50 ccs of alcohol added to the coagulum, which crumbles to a fine powder. The powder is filtered and washed with ether to remove a semi-solid yellow wax and to facilitate drying. The washed papain is dried in vacuo and gives a pure white powder, amounting to 3 grammes, equivalent to 15 per cent on the fresh latex. The papain is tested by using 15 ccs of egg albumin made up to 25 ccs with a 1 per cent solution of sodium chloride to which 1 cc of papain solution (0.01 papain) is added. The mixture is digested for 15 minutes at 80° C. The following results were obtained on different samples of papain :—

(*a*) Juice dried at 35° C (Neutral). Protein digested 55.9 per cent.

(*b*) Dried juice extracted 10 times with

water for 6 hours and filtered ; extract precipitated with 2 volumes of 91 per cent alcohol and dried in desiccator (Neutral). Protein digested 51.0 per cent.

(*c*) Fresh latex precipitated with 2½ volumes of 91 per cent alcohol and dried in desiccator (Neutral). Protein digested 56.8 per cent.

(*d*) Latex treated as in (*c*) and then washed with ether after drying for one day and then dried in desiccator (Neutral). Protein digested 67.1 per cent.

(*e*) Fresh latex precipitated with 5 volumes of 94 per cent alcohol and washed three times with ether, and dried in desiccator (Neutral). Protein digested 57.7 per cent.

(*f*) As per (*e*) but solution acid. Protein digested 2.8 per cent.

(*g*) As per (*e*) but solution acid. Protein digested 2.8 per cent.

These results indicate that the papain prepared from the juice by precipitation with alcohol and subsequent washing with ether gives the most active product.

It will probably, however, be preferable to leave the purification to the manufacturers who purchase the raw product and to prepare a good dried juice on the estate.

The following points in the preparation should be noted :—

(1) The juice should be dried as soon as possible.

(2) The drying should be effected below 40° C, otherwise the activity of the papain will be reduced or destroyed.

(3) Final drying is effected preferably in a vacuum drier.

(4) The product should be ground to powder and packed at once in air-tight stoppered bottles or lead-lined wooden boxes.

Further experiments indicated a remarkable activity when the digestion of the protein (Egg albumin) was carried out at temperatures as high as 90 to 95°C in acid or neutral solutions, which seems remarkable.

(*Note.*—Details of the above experiments are contained in "The Philippine Journal of Science," Vol. 20, No. 2, February 1922, p. 185 and "The Agricultural Journal of India," Vol. XVI, No. 5, Sept. 1921.)

Markets and Value.—The following information has been received in reply to a questionnaire addressed to various firms in England, Canada and America.

Firm A. (New York, U. S. A.) Imports into United States of America for year ending June 30th, 1914. Papain extract—39,419 lbs. valued at $ 74,866 gold. From Germany 94 per cent. From England 6 per cent. Papain "select"—6,181 lbs. valued at $26,613 gold.

Germany—89 per cent, Holland—8 per cent, British West Indies—3 per cent.

The product described as "Select" is probably a dry crude papain. The crude papain, which is now imported, is packed in bags and fetches $1.50 to $1.75 per lb. C.I.F. New York (December 1922). It is usually sold on test. The amount imported at present is probably about 50,000 lbs. per annum.

Firm B. (England.) No information of any value.

Firm C. (Canada.) The dried juice should be packed in a tin, glass or jar container and sealed. The product should be bone-dry.

This firm imports juice from its own estates, packed in ordinary kerosene or gasoline tins.

Firm D. (England.) This firm quotes prices from four different wholesale lists as follows :—(A) 3/2 per oz. (B) 2/6 per oz. (C) 3/2 per oz. Merck's 22/2 per lb.

Firm E. (England.) No information of any value, except as to packing in air-tight containers. This firm states that there is a very restricted market in London, as papain seems to have largely gone out of use in medicinal preparations.

Firm F. (England.) Market price (Sept. 1922) 7/3 per lb. The product should be packed in lead lined cases, containing about 56 lbs. There is a fairly good demand for the product, which is sold on test. It should be free from sugar and starch.

Probably between 250 & 500 lbs. per month could be taken.

Firm G. (England.)—branch of New York Firm A.—Market in London very limited and consignments sent to England appear to have been chiefly exported again. The United States of America the chief consuming country.

The above replies appear to indicate that the chief consuming country is America.

The present price of this product is 3/2 per oz. in London and $2/15 to $2/25 gold per lb. in 10 lbs. bottle (U. S. Pharmacopœia) Powder or $1/85 to $1/90 per lb. Crude, in 150 lb. cases.

Conclusions.—The cultivation of the Papaya tree for the production of papain should be an economic proposition on a small scale. The plants could be grown with other crops ; coffee, or Kapok could be grown if the papaya trees are planted widely.

India's Mineral Resources.

The General Report for 1923 by Mr. E. H. Pascoe, Director, Geological Survey of India, published in the latest issue of the *Records of the Geological Survey of India*, is a document of considerable interest. We note a few of its features here.

Apatite.

Apatite was found in the Seraikela State and adjoining portions of the Singhbhum district by Mr. J. A. Dunn, who considers that there may be sufficient to repay careful prospecting.

Asbestos.

Chitral.—Poor Asbestos in narrow veins was found by Mr. Tipper in the basic rocks in the stream running west from the glacier above the camping ground of Deh Shal on the road from the Shah Janali Pass in Chitral.

Coal.

Bhusawal; Bombay.—The attempts to prove the existence or non-existence of coalfields beneath the Deccan Trap in Western India was continued during the year under review. The boring of the Great Indian Peninsula Railway Company between 1,165 and 1,217 feet passed through nothing but fine-grained traps with green earth.

Central Provinces.—During late December, 1922, and early January, 1923, Mr. H. Walker was occupied in sampling the seams of coal worked at the Sasti and Ghugus collieries of the Ballarpur Colliery Company in the Central Provinces.

Pench Valley: Central Provinces.—At the request of the Central Provinces Government Mr. G. V. Hobson was instructed to carry out an inspection of various collieries in the Pench Valley coalfields, chiefly with the object of deciding whether it would be possible, by relaxing certain regulations in the coal leases, to put Central Provinces' coal on a more secure footing and enable it to compete more successfully with the Bengal and Bihar and Orissa products and more especially with imported coal from Natal. Mr. Hobson has submitted a report on the various areas with remarks on the general coal situation in the Pench Valley.

Coal Washing.—In view of the profound importance to the steel industry of India of adequate supplies of coking coal, the Government of India have, during the past year, given financial support to some experiments on the cleaning of the various Indian coals by the Froth Flotation process. These experiments have been carried out on the Geological Survey premises by Mr. W. Randall under the authority of Messrs. Villiers, Limited. During the year some 70 samples, from most of the coalfields of India, have been tested in this way. Some of the coals have responded to the treatment and the successful application of the process seems to be a matter of finance. There are large areas of sub-bituminous coals, such as those of the Central Provinces, which appear to be entirely non-coking and which cannot, therefore, be cleaned to yield coking products. On the other hand, the second-class coals of Jharia and Bokaro have been found amenable to cleaning. Mr. Randall reports that many of those coals, which are of no commercial value as coking coals since they yield weak coke of high ash content, have been treated to yield a clean product which can be made into coke of excellent quality. It now remains to be proved whether the process can be employed remuneratively on a commercial scale. As the reserves of high-grade coal become depleted and prices rise, it seems justifiable to anticipate that the Froth Flotation process will become more and more commercially feasible. Mr. Randall considers that there are Indian coals which could to-day be profitably cleaned. It is hoped to publish shortly a preliminary report upon the results of these experiments.

Copper.

Chitral.—A small deposit of azurite (derived from copper pyrite) and galena was observed by Mr. Tipper to occur at the village of Chapari in Chitral. A similar deposit in a very inaccessible place is to be seen about 4 miles up the valley. Incrustations of copper carbonates occur in the basic rocks on the road from the Shah Janali Pass just above the first hamlet in the Upper Turikho Valley.

Graphite.

Rajputana.—Midway between Rajore and Dandia, Dr. Heron reports that a small incline has been driven to a distance of about 15 feet into a specially graphitic band in a limestone which here forms the base of the Delhi system. The graphite is, however, too contaminated with clayey matter to be of economic utility.

Two irregular beds of graphitic material averaging a foot in thickness and separated by a yellow quartz vein occur at Bar Railway Station. Three small pits have

been sunk on the bed, showing it to have a strike extension of 100 feet. One of the pits is over 40 feet deep and passes out of the graphitic deposit. The graphite has so far been found too impure for sale.

Half-a-mile south-west of Ajitgarh are six small pits, about 10 feet deep, sunk in a band of graphitic or carbonaceous schist just above the base of the Delhis. This material likewise is too impure to be of any commercial value. Two small pits have been sunk for the same purpose at Cheriabarh, one mile north of Jawaja.

About a mile south of Lotiana, along a line immediately below the south-east side of the summit, quite extensive workings of graphite exist. The bed is a graphitic or carbonaceous mica-schist, dipping north-west into the hill at 75°—85°, with a maximum thickness of 10 feet including 1½ feet of grey quartzite in the middle. This maximum is near the south-western end of the ridge, and the bed thins out rapidly towards that end and more gradually towards the north-eastern end. The pits, 20 in number, are in the form of square inclines, and are in many cases double the medial quartzite band forming a partition. They are from 20 to 30 feet deep and are said to be connected laterally by drives along the graphite bed. The roof consists of micaceous quartzite and is very insecure. One hundred and fifty coolies are said to have been employed at one time in extracting and conveying the graphite, but it is difficult to understand why so much work was done on such poor material.

KAOLIN.

Seraikela State : Bihar and Orissa.—The working of china-clay is a flourishing industry in Seraikela, one of the Feudatory States of Bihar and Orissa. This material is derived mostly from the granite and is found along its margins at several localities, among which are :- Chapra, Mundakati, Bharatpur, Gengemri, south of Samram, Ghagi, Koludih, Rangamatia, Jaspur and Raghunathpur.

LEAD.

Chitral.—In addition to the Chapari locality galena also occurs at Gazan high up on the left bank of the stream draining from the Tui pass in Chitral.

MAGNETITE.

Rajputana.—A piece of magnetite weighing 5 pounds was brought to Dr. Heron from a place half-a-mile north of Kalade (survey sheet 168). It is derived from a quartz vein, probably a segregation in the coarse magnetite bearing granite which characterizes that locality.

MICA.

Nellore : Madras.—In October, 1922, Mr. G. V. Hobson was deputed to the Nellore district, Madras Presidency, to inspect the mica mines with a view to ascertaining whether there had been any improvement in the methods of mining due to the action of the Mica Inspection staff, and whether the latter had justified their existence. The conclusion arrived at was that the establishment of this Mica Inspection staff had not resulted in any improvement in mining methods. Their chief duties appeared to be in connection with the collection of royalties, and as revenue officers they may be considered to have justified their existence.

Kodarma : Bihar and Orissa.—In January, 1923, Mr. Hobson returned to the Kodarma mica area in the Hazaribagh district, Bihar and Orissa, to complete the inspection of the mines in this area commenced last season. On the completion of this inspection, the views formerly expressed were confirmed, the necessity of mine plans and sections being more apparent. It was further concluded that the system of contract-working is undesirable and encourages mining on unsound lines. Its discontinuance would do much to prevent unmethodical grabbing which is causing waste, and would assist any scheme to reduce mica thieving which is ruining the industry.

Kanara District : Madras.—In May, 1923, Mr. G. V. Hobson visited Mangalore in the South Kanara district to examine an occurrence of mica reported from the Uppinangadi and Udipi taluks of this district. The majority of the points from which mica had been reported were inspected, but the breaking of the monsoon curtailed the investigation. In none of the cases reported had mica *in situ* been found ; this was true with regard to all cases visited, and from enquiry the same appeared to be true of those not visited, the mica found being surface mica accumulated in the soil. This surface mica was neither abundant, nor of good size. Much of the mica seen was badly buckled, cross-grained and otherwise flawed, and none of it would cut more than " No. 1" in size.

OCHRE.

It occurred to the writer some time ago that the powdery haematite which exists in enormous quantities in Bihar and Orissa and which is at present, not being utilized for the manufacture of pig iron, might have a considerable potential value as a paint-material or ochre. Attempts on a laboratory scale to convert

it from its present dark steel-grey colour to that of red ochre by intensive weathering with moisture, air and carbon-dioxide, have not, so far, been successful. If such a conversion were possible, the result would be of far greater value than any smeltable iron ore. This is a line of research which offers great possibilities.

PYRITE.

Kharwa : Rajputana.—Dr. Heron inspected a mine from which iron pyrites are extracted at a small village named Goari (Guaria, 26°12′; 74°30′), 1½ miles east of Kharwa in Rajputana. The deposit was found during the digging of a well which has been widened and deepened to form a shaft 75 feet deep. The ore occurs in one of the pegmatite veins which happens to cut across the shaft about half-way down, the country rock being well-bedded flaggy tremolite schists. The vein "dips" at a low variable angle towards the north and its underlying portion has been brecciated by a folding movement and the breccia cemented by the sulphides pyrite and chalcopyrite and an undetermined mineral; chalcopyrite is much subordinate to the iron sulphide. About 2 feet of the vein is sulphide-bearing. Two levels, 35 feet and 10 feet long, have been driven but pass out of the vein which "dips" below them. The mine is equipped with two oil-engines, a smaller one lying outside; these were used for working pumps which have since been removed, and are now employed for lighting the shaft by electricity. Dr. Heron remarks that such brecciation of pegmatite is unusual in the district and is not likely to be more than a local crushing of limited horizontal extent.

SALT.

Rann of Kachh.—At the request of the Government of Bombay an officer was deputed to investigate the anticipated exhaustion of the brine wells in the Little Rann of Kachh, in view of the falling off of the supply of brine near the edge of the Rann. Rao Bahadur Vinayak Rao was deputed for this purpose.

Salt is being obtained at Kharaghoda close to the south-eastern border of the Little Rann, the brine being pumped from shallow wells. Mr. Vinayak Rao advised a line of borings at regular intervals across the Rann from Kuda in the Dharangadhra State and from Tikar a few miles further to the west. No borings were put down during the field season 1922–23, but with the generous assistance of the Dharangadhra Durbar a line of shallow wells was dug north-east of the Kuda salt-field at intervals of approximately one mile. The depths varied from 4 to 9 feet, the material passed through consisting of three or four layers of stiff bluish and black clay containing crystals of selenite, overlying a brine-bearing gritty sand. Analyses of the brine by the Department of Industries show that the brine becomes more concentrated towards the middle of the Rann, and that the percentage of chloride remains much the same in the constituents of the brine from all the wells. Deeper systematically arranged borings are necessary to prove the presence of deeper brine sands or deposits of salt.

There is little doubt that the brine in the sand has been imprisoned by the overlying clay. The latter contains some cerithiids and a *Cyrena*—probably *Cyrena impressa* Deshayes—while in the sand were found fragments of *Avicula, Corbula* and *Nassa*. It would thus appear that estuarine have succeeded marine conditions in recent times in the Little Rann.

Sagaing and Shwebo : Burma.—Captain F.W. Walker visited the salt workings of the Sagaing and Shwebo district. His results have been noted in the last annual report.

TIN.

Mergui District : Burma.—The alluvial flats of the Khe Chaung (Survey sheet 96 M/2) carry tin ore, and have recently been worked for tin.

STEATITE.

Seraikela : Bihar and Orissa.—Steatite or Talc occurs associated with the Dharwar rocks in Seraikela State, and was at one time worked west of Bara Kadel in the southern end of the State. Here the mineral occurred *in situ* as the altered product of an ultra-basic igneous rock. According to Mr. J. A. Dunn more thorough prospecting might bring to light additional high grade deposits.

The State of Louisiana—not ordinarily a pioneer in engineering matters—has lately been trying successfully the experiment of roads constructed partly of iron. In several localities the highway authorities have been using iron ore as a binder in place of sand or clay and have found it far superior to the usual material. A large deposit of iron ore has been found in the north-western part of the State so that the cost of it works out at only 10 cents a yard as against a dollar a yard for sand or clay. The new method permits of other economies also, so it is estimated that in the construction of new roads it effects a saving of from $2,000 to $3,000 a mile.

Flying For All !

By Harry Harper.

That you, and I, and all of us, should have the opportunity of enjoying, here and now, and cheaply as well as safely, the greatest of all modern thrills—that of speeding through the air in a flying machine—is the keynote of a wonderful scheme, in many respects the most important, aerially, ever devised, upon which the Air Ministry is now engaged.

Lord Thomson, our new Air Minister, is heart and soul in it—is pushing it enthusiastically. Flying, in his view, can never make a universal, intimate appeal, until it is just as simple and easy to take a week-end swoop across country, above the tree-tops, as it is to play a game of tennis or golf.

And Major-General Sir Sefton Brancker, Director of Civil Aviation, who now has the actual details of this great plan in hand, is just as ardent in its development as is his chief.

What is to be our popular "open sesame" to the world's greatest era ?

How can flying be made cheap enough, and safe enough, for all our young folk to spend summer evenings in becoming adepts at it, and in flashing at week-ends not merely to seaside resorts in this country, but passing high above the Channel and gliding down at beauty spots in other lands ?

The answer is found in three words—popular flying clubs !

Such clubs can now be made cheap ; can bring air travel within the reach of everyone by a wise co-operation between the Government and local authorities and associations.

Primarily—and this will be the biggest step of all—it is part of the Air Ministry scheme to present, free of charge, to approved clubs which local enthusiasm brings into existence, a certain number of the low-powered light-planes which are the newest and most promising trend in air design.

Developed out of glider and motor-glider contests, and now to be the subject of exhaustive official trials, these little "pocket-planes", which will carry either one or two occupants according to their engine-power, are turning already a completely new page in aerial history. Not only do their tiny engines consume an astonishingly small quantity of petrol, but their safety is already remarkable.

Just take one instance which can be explained simply. The cause of many accidents, since flying began, has been the "stalling" of an aeroplane in flight, by some error of the pilot, followed by a nose-dive which the airman may be unable to check before the machine strikes the ground.

But the little "air-cars" we are getting now are astonishingly controllable. If a pilot should "stall" one of them, bringing it almost to a standstill in the air, the little machine instead of diving dangerously, simply sinks down a trifle and then begins to glide forward again. And they alight so slowly that one can bring them down safely in practically any field which offers itself.

Motor-cycles, or light cars, of the air ! That is what these machines are.

And our young Britons and their fair companions, sitting snugly side by side, wind-shielded from the rush of air, will—thanks to our State-aided flying clubs—soon find in aerial transport an exhilaration, a new, entrancing thrill, which will pale a insignificance the pleasures of motor travel on the roads. The project for which it is hoped, now, that a definite Treasury grant will be made, is for the Air Ministry to hand over to local flying clubs—established near all great centres of population—a little "fleet" of these latest type light 'planes, single-seaters as well as two-seaters.

Starting thus with the advantage, of their "flying stock" already provided, the local organizations will be able to concentrate on the acquiring of a suitable club-house and manœuvring ground with its equipment of sheds, repair shops and expert mechanics.

It is clear already that any band of keen young men, going about the matter in the right way, will find public-spirited people ready to help them considerably. Land-owners who realize the value of instilling an "air sense" into the young folk of to-day are expected, in a good many cases, to offer the use of a flying field without charging any rent for it.

If they can get their machines and their grounds without expense, the clubs should be able to arrange fees and flying charges on such a modest scale that the appeal will be universal.

We shall realize at last, in actual, daily fact that glorious dream of "flying for all".

Picture the scene on a fine summer's evening. The air club house—pride of the ardent members and their admiring friends. The

little cluster of sheds, the smooth sweep of the unobstructed 'drome! White winged-machines flitting here and there! Merry laughter! Faces flushed by the exhilaration of a swift passage through the wine-like purity of the upper air!

Then the week-end tours, high long free, dustless "skyways". The novelty and pleasure of visiting other flying clubs The sporting joys of inter-clubs races and aerial contests.

I believe the day is not very far distant when air travel will be safer than mechanical transport on sea or land. A traffic problem in the air is a very remote possibility, for in the atmosphere, there is ample space for every inhabitant of these islands to navigate his own motor-glider.

AIRMEN OF TO-MORROW.

All these things are not merely possible now. They are definitely reliable. It is a question of getting the movement started and with State aid it can be done.

Fancy what it will mean to us, nationally, when we can say that young Britain is really taking to flying; when all young folk are having this wonderful "baptism of the air", when we know that ambitious boys are turning their thoughts to an airman's life just as longingly as, in the past, they have let their thoughts dwell upon the romance of the sea.

The wonderful achievements of the flying men who have now engaged in an air race round the world have focussed attention on the possibilities of air travel more sharply than ever before in the history of flying.

Youth is fired with the romance of the air. Its heroes are no longer knights in shining armour, but the modern Galahad with his winged steed.

These are the things we want. These are the things upon which the future of the Empire will depend. The world air age is coming. We are on its threshold now. It is going to dominate and reshape the life of the entire globe.

Young men quickly adapted themselves to the air during the war. The new young men will be just as quick to fly under the happier conditions of peace.

Youth will be served. It is the young who take most readily to this idea of deserting earth for air, and with the flying club, properly exploited, we can lay, here and now, the foundation of an "air sense" which will carry us, undaunted, into this great new era of globe encircling travel.

Trading with Russia.

The Council of National Economy has proposed that products to be worked up in Russia for export should be admitted without tax. This presumably opens up the possibility of a revival of the pre-war importation of thread from Great Britain.

The renewed importation of textile machinery is stated to be contingent on a resumption of fuller commercial relations with abroad. In the meantime the President of the Textile Syndicate has expressed a desire that English engineers should come to Russia to examine the possibilities of the provision of new machinery.

As regards raw materials, the Syndicate is hoping for a reduction in the import of American cotton as a result of increased production in Turkistan. The purchase of Egyptian cotton of a quality superior to that which can be produced in Russia will, however, be continued.

The amount of raw cotton produced in Russia in 1923 was between 9 and 10 million poods, as compared with 60 millions in 1915–16.

The Trusts controlled by the Central Coal Organization state that the gross production in the six months ending March 31 amounted to six million tons, but that, owing to difficulties in finding a market, the stocks at pit mouth have increased to 3,300,000 tons. With a view to liquidating part of this accumulation, negotiations have been opened up with Italy, Turkey and Austria for the export of a few hundred thousand tons.

It is proposed to do the business through British firms who know the Mediterranean market, and Mr. Krassin is in favour of this scheme, which would offer the possibility of an import of an equivalent value of British coal to Petrograd.

Owing to the fall in foreign values on the Moscow exchange, grain exports have virtually ceased and for the same reason exports in timber and other raw materials are difficult. At the moment there is almost complete stagnation in foreign trade.

The number of foreign business men arriving in Russia has decreased, and the present attitude is one of disappointment, with some hope that the results of the London Conference will open up possibilities of safe and profitable foreign investment.

Industries of the Baroda State.

The Annual Report of the Department of Commerce and Industry, Baroda State, for the year 1922—23 is an interesting document.

Out of the 15 textile mills projected during the recent years, six cotton mills and one woollen mill have commenced work. The opening ceremony of the Maharani Woollen Mills was performed by Shrimant Maharaj Kumar Dhairyashilrao on 13th December, 1922, and that of the Darbhanga Mills by the Maharajadhiraj of Dharbhanga on the 16th January, 1923. Five mills are under construction and are likely to commence work in the current year. Schemes of two have not yet materialized and one has gone into voluntary liquidation.

The factory of the Union Dyeing and Bleaching Company, Ltd., which went into liquidation last year was purchased by the Virgin Mills, Ltd,, a foreign company registered in Baroda, and has already commenced dyeing of yarns. The Company thinks of erecting a cotton spinning and weaving mill along with the dyeing factory.

Chemical Industries.

The Modern Chemical Works, Ltd., continued to work throughout the year. They were in need of working capital which has been recently provided. The initial period of danger seems to be over and it is now hoped that it would work successfully.

The Alkali Industries at Dwarka and Kodinar have not yet materialized and owing to the financial and technical difficulties involved it would take a long time to establish these industries. The concessions for the Dwarka Alkali project were extended upto December, 1924. The Kodinar Alkali lease is under preparation.

Owing to unfavourable conditions, the concessions given for wood distillation were cancelled at the request of the party concerned but they are at liberty to apply again when conditions improve.

Pottery, Paint and Cement.

The Hume Pipe Works at Miyagam have stopped work owing to unsuccessful experiments. The Fern Pottery Company, Ltd., of Dehegam started work during the year under report. They used to manufacture slate pens and jars but owing to lack of expert help and working capital they had to discontinue this. They are successfully ,manufacturing moist paints which find ready market in Ahmedabad.

The Dwarka Cement Company manufactured during the year 1922, 29,300 tons of cement and has paid Government during the period Rs. 5,300 as royalty. The Kodinar Cement Works did not materialize and at the request of the party, concessions were renewed upto 31st December, 1924.

Oil Mills.

The Asian Oil and Margarine Manufacturing Co., Ltd., of Kheralu, has started crushing castor seed. The Baroda Oil Mill has already been converted into a proprietory concern and is reported to be doing fairly good business. Similarly at Damnagar, a small factory for crushing sesamum has been started. It is highly necessary that the oil industry should be investigated by an oil expert and suggestions for improvement be made.

Dairies.

Among the dairies contemplated in the previous year, the Uttar Gujarat Gopalan Company and the Baroda Pinjra-Pole are working satisfactorily.

New Industries.

Though the conditions were not favourable some new concerns were promoted in the year under report and some of them materialized as mentioned below :—

(1) A Nut and Bolt Factory, at Baroda. Its maximum capacity is one ton per day.

(2) Bharat Swadeshi Slate Pencil and Paper Manufacturing Company, at Petlad.

(3) The Gaekwar Dairy Farm, at Kalol.

(4) The Kadi Industrial and Weaving Company at Kadi.

(5) An installation of Electric Supply Station, at Dabhoi, has been arranged.

(6) A Hand-Loom Factory, at Kalol.

(7) A Ginning and Pressing Factory at Bahadarpur, a Ginning and Pressing Factory at Bhatpur and two Presses at Dabhoi have been promoted.

(8) A Power Weaving-loom and an Oil Factory have been started at Damnagar.

Canning Industry at Velan.

As a result of the fish canning experiments carried on by this Department at Velan, an application was received last year for co-operation with Government in the further investigation of the Industry and for taking it up if it was found successful. The matter was under consideration of the Government at the end of the last year. During the year under report, the proposals of the Department were sanctioned and order for a can-seaming machine was put with an American manufacturing firm.

Infant Mortality and its Prevention.

By Rao Bahadur K. Raghavendra Rao, B.A., M.B. & C.M.,
D.P.H. (CAMB.), Health Officer, Corporation of Madras. *

The welfare of the child is the welfare of the nation. To obtain an adequate and healthy population the greatest care is needed before birth and throughout childhood and adolescence, and this much-needed care can only be obtained at the hands of the mother. It doubtless follows that the well-being and prosperity of nations, and of the families which compose the nation, are largely dependent on the health and welfare of its prospective and actual mothers. Infants and nursing mothers are rapidly influenced by their environment which is very complex. The mother is the main element in the environment of the infant. Her health and habits, her capacity for domesticity, and her knowledge of infant care and management (mothering), directly influence the infant's health and physical fitness. If she is overworked or suffering from chronic fatigue or illness, the infant must suffer for want of sufficient care. Conversely, a sick baby puts a strain upon the mother's health and physique, and thus a vicious circle is established.

Although it is certain that Nature, when she endowed woman with the gift of motherhood, endowed her also with the power necessary to secure her comfort and normality, man's indifference and incapacity have done much to invalidate the gift and to spoil the endowment. Luxury and sloth on the one hand, over-work and insufficiency of food on the other, are potent influences for evil. In these strenuous days of so-called over-civilization, luxurious and intemperate living, a very large proportion of children born, commence their careers, with a reserve of vitality, low in comparison with that of the children of a few generations ago. Such children often possess a heritage of nervous instability which exposes them to many so-called "constitutional disorders". Mistakes in feeding and in general management which a few generations ago would perhaps have caused but temporary and insignificant symptoms, may be, and often are, to-day, responsible for permanent and enduring consequences which make health impossible. Hence arises an increased necessity on the part of—the great householder—the State, for medical watchfulness, and on that of the individual, for personal prudence.

One needs to look back as well as forward. Weakly parents, a feature of the present generation, are largely a result of premature motherhood, of ill-nourished childhood, of unhealthy conditions surrounding expectant and nursing mothers, of the passing away of customs essentially hygienic, carried on for ages under religious sanction, but now replaced by care based on scientific authority.

Infant mortality is reckoned as so many deaths amongst children under one year of age: and for purposes of comparison, it is calculated as so much per thousand live births. This so-called "infant mortality rate" in the East is at least three times as high as in the West. "A high infant mortality rate implies (a) the loss of many infants; (b) the maiming of the many surviving children, for conditions which kill some, injure others; (c) a high death-rate in the next four years of child life; (d) the existence of unhealthy conditions in the mothers and in the home life of the people."

Infant mortality is a big complicated problem. An infinity of causes is quoted, but no one operates itself. A fetish is often made of one cause from amongst the many; *e.g.*, poverty, maternal ignorance, intemperance, syphilis in the parents, smoky or dust-laden atmosphere, insanitation, unpaved yards and streets, bad housing and over-crowding, slums, bad sewerage, etc.

There is no doubt that each one of these causes operates to a certain extent; the first cause leading to excessive infant mortality is not always the same. No measure of relief can be of real or lasting benefit unless directed against all these causes. Some persons make a fetish of "maternal ignorance"; but is there any reason to believe that rural mothers, among whose infants mortality is low, are less ignorant or better educated than their own urban sisters, among whose infants mortality is high? The comfortable doctrine of "maternal ignorance" embodies an aspect of truth, but it is mischievous when it implies, as is often said, that what is chiefly required is the giving of theoretical instructions as to matters of personal hygiene, or the distribution of health literature. Of what avail is the distribution of health literature when the great majority of those for whom it is intended cannot read?

The social factors of the evil are certain "Devils," *viz.*, Dirt, Disease, Destitution and

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* This paper was submitted to the All-India Baby Week Committee and was awarded a gold medal.

Drink. It is as needful to comprehend the social as well as the medical aspects of the problem. The principal facts concerning infant mortality are :—

(1) Its incidence is chiefly in the first three months and in the first week of the first three months.

(2) Its incidence during the first month of life differs but little in different social classes and in different types of environment, but as the child gets older the mortality in favourably situated classes becomes progressively lower.

(3) In all countries it is higher in urban than in rural areas.

(4) Its incidence is largely influenced by domestic condition of life and is dependent upon social classes of the community.

(5) It is high amongst the poor and low amongst a better social class.

(6) It is higher in the crowded parts of a town than in the outskirts.

(7) It is higher in towns which are not sufficiently provided for with the sanitary environments essential to civilized social life, such as public water supplies, drainage, prevention of smoke and dust, control of food and food-supply, etc.

Most important ones are natural or artificial conditions influencing the growth and development of the infant from the time of conception and birth until it attains the age of one year—conditions which are, broadly speaking, economical, social, and environmental. "The growth of a child is a continuous process commencing at least six months prior to birth to the age of about 4 years, a process not interrupted either by the fact of birth or by the act of weaning." It is a remarkable fact that however great may be the degree of poverty and degradation of the parents, the great majority of children are born healthy. By virtue of some "mysterious law of transmitted impulse", the unborn child fights strenuously for its own health at the expense of its mother and arrives in the world with a full chance of living a normal, physical existence. Infantile mortality, then, may be considered as largely the capitulation of the young and delicate organism to the adverse conditions into which it is born.

The essential steps for preventing the mortality amongst infants must be considered in two main groups (apart from the question of legislation), *viz.*, (a) improved sanitary and social circumstance, with special attention to domestic and municipal cleanliness ; and (b) specialized infant welfare work which should include the education of girls and mothers in personal and domestic hygiene, sound and effective midwifery, the care and feeding of infants, attention to the physique of the mother. It cannot be too strongly emphasized that the measures likely to succeed are the clearing of slum areas, provision of open spaces, better housing, effective sewerage, prevention of atmospheric pollution ; in other words, the provision of the elementary sanitary environment for civilized social life, coupled with a well-ordered system of efficient maternity service. These two parts of our programme should go hand in hand if we are to hope for or deserve good results. It is radically wrong to think of an infant as a separate and independent entity, or apart from general environmental conditions under which we live, move and have our being. Broadly speaking, the problem of infant mortality will be solved only in so far as the whole function of motherhood is fulfilled under favourable conditions.

Environmental conditions in a poor Indian home are neither conducive to a safe delivery nor to healthy upbringing of the infant. The house itself is overcrowded with 8 to 12 tenements. Each family of four to five souls has but one room for living, which opens on to a yard often uncovered, unpaved and undrained. House refuse and other sources of contamination are in or close to the house. Food, especially infant's food, cannot be stored or protected ; and in the unlighted and unaired premises cleanliness is rendered difficult. The problem of child-birth in the homes of the well-to-do differs materially in theory and in practice from that in the homes of the poor. While the former can get assistance, domestic maternity, medical aid, etc.,the latter have to drudge till the last moment ; and as for maternity and medical assistance, they simply cannot afford. The poor mother is either unequipped or under-equipped and she seems to come to her supreme function almost entirely unready and uninformed ; and she fulfils it somehow without sufficient skilled assistance. The domestic problem here unfolded must be solved at first in order to avoid the great mass of preventable suffering.

The effective application of remedies is not possible for the individual. It is a communal problem calling for the intervention of the State. "To save child-life is an axiom of State prevention ; to remedy defect is an axiom of State economy ;" and it is best to remember that all sanitary reform should be carried on a comprehensive policy steadily pursued and not attempted by piecemeal effort,

by spasmodic endeavour inspired by fear or panic.

A child welfare scheme which provides for only curative treatment is eminently unsatisfactory and insufficient. Preventive measures must bulk largely in any scheme likely to result for a successful issue. The principles underlying an organization for child welfare are threefold, *viz*:—

(1) The whole function of motherhood must be fulfilled under favourable environmental conditions.

(2) No child-bearing mother should be without adequate and skilled assistance.

(3) The infant welfare centres should serve the purpose of supervising the normal baby and not merely the sick one.

The adequacy of arrangements available is one which largely depends upon finance; but no responsible government could grudge to set apart a fair portion of their income for the welfare of the nation at birth. A comprehensive maternity and infant welfare scheme should include:—

(1) An adequate medical, midwifery and nursing service for pregnant women before, during, and after, labour, efficiently controlled and supervised.

(2) Infant welfare centres for medical or other consultation, home-visiting, education of the mother, and care of the baby.

(3) Infant treatment clinics.

(4) Health-visiting, giving advice and small help to mothers in regard to their home conditions, personal hygiene, care and feeding of infants, vaccination, etc.

(5) Maternity homes and hospital accommodation, and hospitals for children.

(6) Provision for the training and controlling of midwives and Health Visitors.

(7) Provision for bringing Dhais under control and putting them into line with trained midwives.

(8) Supply of pure cow's milk free or at cost price for needy infants and mothers.

(9) Provision of Creeches, day-nurses, children's homes for receiving infant orphans.

(10) Periodical Exhibitions and Baby Show competitions.

The first step of the scheme is an infant welfare centre, under the supervision and guidance of a competent Lady Doctor, assisted by a staff of well-trained Health Visitors and midwives. Such a centre may serve for carrying out items 1 to 5 of the programme; the rest being arranged for in connection with Public or Municipal or private maternity hospitals. If conditions permit, the centre itself might be developed into a maternity home with a few beds where expectant mothers requiring assistance may be received, kept, delivered, and looked after for a period extending to at least 3 weeks before and after confinement.

In the matter of Creeches, etc., assistance should be obtained through large employers of labour and from Social and Philanthropic Societies.

A well-equipped centre should function as follows:—

The service of a midwife for attending upon women in labour should be available at all hours of the day and night. Such service may be rendered free of cost to the very poor or, sufficient staff being available, on payment according to a fixed scale.

At each centre there may be a small dispensary for medical attendance of infants and children under five years in so far as their minor ailments are concerned. Mothers, prospective and actual, might be brought together here for friendly talks in relation to their health, and that of their babies, with special reference to the importance of "mothering".

Every mother should be impressed with the lesson that the baby likes her milk most and thrives best upon it. She should be told that babies who are suckled, breast-fed at regular intervals till they attain the age of ten months at least, rarely get unwell even if not luxuriously provided for in other respects. Mothers who are unable to suckle their children, either for want of sufficient milk, or from some other cause can consult the Lady Doctor, who will examine mother and infant, and give advice as to the food which can be substituted for breast-milk, as to its administration, etc. Cow's milk is the best and most wholesome substitute for mother's milk. The general feeling against the use of cow's milk for feeding children arises from the fact that the milk is either impure or else is given in its raw state. Very often the whole milk is given and the young infant is unable to digest it. Milk, to agree with the infant's constitution, should be received in clean vessels, heated on low fire until it just begins to boil, but never boiled, and preserved in a cool place properly covered so as to prevent access of dust, flies, etc., into it. More than all it is necessary to dilute the milk with a sufficient quantity of clean water, boiled and cooled, according to the age and constitution of the infant. As a general rule when cow's milk is given to infant, it is best to start with a mixture of one part of milk and three parts of

water, to which a little clean sugar is added. This rule is especially to be observed if the infant is below three months. After a week or two, if the child is alright and does not suffer from stomach ache, diarrhoea, or vomiting, the quantity of water may be reduced gradually until at three to four months the infant is able to take the whole milk and digest it. The appearance and general condition of the infant is the surest indication that cow's milk is agreeable to its life and growth. At each feed the infant must be given only that quantity of milk which it willingly drinks, and in no case should the infant be fed under compulsion.

No food other than cow's milk should be given to the infant without consulting a doctor. A small milk depot should be attached to each centre. Any mother who cannot suckle her baby and consequently finds that her baby is not progressing well but is too poor to buy cow's milk may take the child to the centre where milk, if it cannot be given free, may be sold at cost price.

Success in infant welfare work depends almost wholly upon mutual co-operation and good-will between the workers and the public. The former should be clever, tactful, sympathetic, and large-hearted ; and they should possess an understanding of the private, domestic, conditions of life of women amongst whom their work lies. The members of the public, those for whom the work is done, should be considerate towards the workers. A lot of the nursing material available at present is far from satisfactory. The average Indian woman does not take to midwifery or sick nursing out of philanthropy, but chiefly when she has to make a living by herself.

Unlike England, voluntary workers and associations organized and conducted by Indian ladies for doing social service amongst the poorer classes are few and far between. And European women on account of the difficulties of language and social customs, find this work in India somewhat difficult. Maternity work, especially among the poor, is still very largely in the hands of the unqualified or incompetent women—the Dhais—60 per cent or more of the cases being attended to by them. The existence of such a class practising midwifery is universal in all countries, and has to be reckoned with and not treated as a negligible factor in any scheme for infant welfare. For these women such a thing as the "Science and art of obstetrics" does not exist. This is true to a very great extent even in respect of many a woman who holds a certificate of training. Over her a cloak of ignorance, superstition and fatalism still hang, shutting out the light of the present days. But she is still the agency which affords to the poor obstetrical aid. Her services should, at the outset, be utilized for information as to prospective cases of labour, even at the cost of a small reward of a small silver piece. For, even in the best of circumstances, she at present dominates the situation. She is not exactly a professional, but a woman who keeps a house and takes to maternity work in her off-hours ; and that only in houses where she is known. As by degrees we win her confidence, we must allow her the privilege of watching and observing methods of cleanly midwifery practised by her qualified sister, so that in course of time she may not only seek our assistance, but also learn and practise cleanlier and improved methods of work.

Ignorant opposition often stands in the way of sanitary reforms. Certain legislative enactments in their specific application to infant welfare would go a long way in rendering administration more easy and effective. They are :—

1. Registration of midwives and Dhais—control and supervision of their work.
2. More accurate registration of births and deaths, and medical certification of the causes of deaths.
3. Control of supply of pure cow's milk ; control of the sale of patent foods or milk preparations advertised for the infant.
4. Compulsory notification of pregnancy.
5. Compulsory notification of Puerperal fevers.

More legislation in this as in other fields will prove abortive unless it is continuously and steadily supported by an intelligent and well-informed public opinion. **"Sanitary instruction is even more essential than sanitary legislation, for if in these matters the pubiic knows what it wants, sooner or later the legislation will follow : but the best laws in any country like this are waste paper if they are not appreciated and understood."** The real issue is often individualistic and possessing characteristics hidden and inherent in the social and economic system, sometimes inspired by religious customs and prejudices of considerable potential value. **"The conclusion," says Mr. Samuel, "is clear that it is the duty of the community, so far as it can, to relieve motherhood of its burdens, to spread the knowledge of mothercraft that is so often lacking, to make medical aid available when it is needed, to watch over the health of the infant. And since this is the duty of the community it is also the duty of the State. The infant cannot indeed be saved by the State. It can only be saved by the mother. But the mother can be helped and can be taught by the State."**

National Debt Redemption.

Views of Financial Experts.

London.—Professor Edwin Cannan attended to give evidence before Lord Colwyn's Committee on National Debt and Taxation. Evidence was also received from Mr. A. M. Samuel, M.P.

Professor Cannan suggested certain alterations in the method of setting out the national debt, with a view to showing clearly that part of it consisted of the liabilities for savings bank deposits and the fiduciary currency note issue. He advocated the reduction of short term debt even at the expense of some immediate loss in interest. He thought conversions which increased the debt should be looked upon with suspicion; whether the decrease in the interest charge justified them depended upon future events, but, even if a balance of advantage could be shown, it must be considerable to outweigh the discouraging effect of the capital increase.

In his opinion the best way to secure steady redemption of debt was to fix a date, not too distant, for its completion. He thought 35 years might be a reasonable time to allow. On this basis an annual payment into sinking fund (which would better be called "Debt Redemption Fund") of 100 millions, increasing each year by the interest saved, would be necessary. The provision of this fund would be well worth the taxation required for it. The objection that high taxation reduces savings lost all its validity when the tax was applied to debt repayment, for the taxpayer would reduce his consumption to some extent, and the debt holder would reinvest the whole of the money he received.

Taxation Policy.

Dealing with particular taxes, Professor Cannan pointed out that over a quarter of the tax revenue came from alcohol and tobacco; it appeared to him desirable to keep up the maximum possible yield from these sources. Not far from half the total tax revenue came from income-tax and super-tax and this taxation, of course, largely reduced the saving of the taxpayers. But that was not a conclusive objection, and no better substitute could be found.

The death duties required some readjustment. He suggested that it would be better to base their progression on the magnitude of individual legacies and perhaps partly on the wealth of the legatee. The old, more detailed scheme of progression according to relationship should also be restored. It was worth considering whether tax differentiation in favour of the surplus accumulated over inherited moneys might not be practicable and desirable.

Professor Cannan suggested that the additional 50 millions a year which he recommended for redemption purposes should be found not by increasing taxation but by reducing expenditure.

Mr. A. M. Samuel's Plan.

Mr. Arthur Michael Samuel, M.P., spoke in favour of persistent but gentle reduction of the national debt, out of saved earnings, in bad times as well as good. But he asked that the reduction should be within limits to be ascertained, so as not to trench upon capital. Too rapid a reduction would be harmful, he said, if only because it would destroy instruments of credit which could not be replaced, except out of net saved earnings, and, unless they were replaced, a check would be given to trade, and unemployment would be increased. He pointed out that the asset, in the national balance-sheet, in the form of national safety, which had been purchased by the expenditure of the war debt, could be replaced by income and revenue-yielding assets. Such assets could be obtained from the growth of national profits in the hands of citizens by leaving capital in their hands instead of removing it from the employment-giving and profit-and revenue-yielding area, by taxation for debt repayment.

Subject to repayment of maturing debt, floating debt should be dealt with first. A large floating debt, which might have to be repaid in times of crisis, was a danger quite apart from the question of inflation. Its reduction would assist the movement towards conversion of existing long-dated War Debt into loans bearing rates of interest less than those at present paid. A national debt not being reduced, and especially an unbalanced budget, frightened lenders and disinclined them to supply capital, either to the State or to industry, except at high rates of interest. Judicious and gentle reduction of the floating debt should lead to the cheapening of loanable money, which would not only facilitate debt conversion, but would stimulate industry and give strength to British capital values and credit at home and in foreign commercial circles. At the same time

Mr. Samuel urged very strongly that debt should not be repaid by taxation at a greater rate than the net growth of national capital through net savings after providing for the annual increased requirements of the annual population-increase. He put the additional capital requirements for increase in population at £160,000,000 per annum, and pointed out that unless this capital sum at least were so provided out of savings every year, the standard of life of our working people must fall. To take existing capital by taxation instead of tapping the net surplus of national production over national consumption and population requirements was cancellation of debt, and not repayment. It disturbed the financial and commercial structure and led to deflation in the form most harmful to employment and commerce, and ultimately impoverished the whole nation. Again, taxation should leave enough in the taxpayers' pockets for industrial capital to be compelled to offer to lend itself at low rates of interest.

Effect of High Taxation.

Dealing specifically with existing taxation Mr. Samuel represented that income-tax was felt in production costs 12 months after rates were felt. High income-tax sooner or later impeded extension of trading and production, prevented reduction of cost of living, and handicapped embarcation upon new and untried enterprizes which needed capital. High taxation of profits, by preventing falls in the cost of production, rendered it more difficult to compete in foreign markets with world prices. Overhead charges were sometimes increased by it even being necessary to borrow capital to pay profits taxes, and especially death duties. High taxation encouraged administrative extravagance in trade, and removed attractiveness from speculative enterprize yielding high profits on which the State took toll, and by which employment and revenue were created, and research, invention, exploration and discovery were stimulated.

As regards death duties they not only weakened industrial capital resources, but had the evil effect of inducing private firms to turn themselves into limited liability concerns, with the consequent loss of the valuable personal human touch between employer and employed, and, perhaps, reduced commercial efficiency to the lower level associated with limited liability as compared with private trade. Death duties, income-tax, and super-tax, Mr. Samuel thought, were drawing capital from industry faster than industry could replace it by saved earnings after providing for needs of increased population. The point of danger had, therefore, been reached at which they should be reduced.

It was incorrect to say that money taken by taxation from industry and used to repay the debt holders would go back into industry. The repaid debt holder did not re-invest in trade the money which had been taken out of trade by taxation. Trade was, therefore, drained of capital. The repaid debt holder re-invested the money in loans giving a fixed rate of interest, either British Trustee loans of various kinds, or foreign, or Colonial loans. Few of such loans, in Mr. Samuel's opinion, now-a-days proved to be the direct or early cause of British employment or commercial extension. He thought that the old idea that all loans granted by Britain to foreign or Colonial borrowers left these shores in the form of goods needed serious revision. He further pointed out that taxpayers were disinclined to increase their investments in industry now-a-days because of the fear that while profits might be taxed unduly heavily by the State, if losses were made as a result of industrial imaginative enterprize, the losses fell on the adventurous. He advocated the befriending of capital that went into venturesome enterprize which would provide employment and created an increase in the capital area over which taxation could be spread, and thereby lessened on each taxable unit the tax-weight for debt. He thought that not enough attention had been paid to the theory of reducing the burden of the national debt by increase of the nation's profit-income. Increased income would reduce the strain on the taxpayer for debt service. With more national income on which to assess tax the weight of taxation could be reduced all around. This would seem to be almost a healthier way of reducing the burden of the debt services than repayment of debt by taxation so heavy as to hamper industry and employment, which was, in Mr. Samuel's opinion, the case at present.

The report of Mr. Hobson, Assistant Superintendent, Geological Survey of India, on his investigations for Mica in the Uppinangadi Taluk of South Kanara District, may be summed up in one short instance: "That there is mica here to make mining worth while appears to be very doubtful." The Madras Government have accepted the report and ordered that no further official need be taken in the matter.

British Empire Exhibition.

Motor Transport Exhibits.

London.—The exhibits of public service and commercial motor vehicles at Wembley form an important group in the Joint Motor Exhibit organized by the Society of Motor Manufacturers and Traders, while in individual instances branches of the industry are also represented in the Main Hall of the Palace of Engineering.

The exhibits are, on the whole, quite representative, ranging from the very lightest delivery vans upto the largest six-wheeled goods-carrying vehicles. Among makes figuring in the heavier group of petrol vehicles are the Dennis, Karrier, Scammell, Thornycroft, Guy, Burford, Vulcan, Tilling-Stevens, Albion, Bristol, Halley, Leyland and Maudslay. Many of the exhibits of these firms are of distinct interest.

Fifty Hundred-Weight Vehicles.

For example, the 2–2½ ton Dennis chassis is specially designed for Overseas service as a result of the experience gained during a world tour carried out by Sir Raymond Dennis since the war. The engine develops 40 h.p., the gear box gives four speeds, and the final drive is, of course, by worm-gear. The general dimensions, such as wheel track, clearance, and so on, are in every case those most suitable for universal Overseas use.

Another Overseas chassis of similar carrying capacity is the Burford. This is a very strong and simply designed production. The engine, clutch and gear box are in one unit with three-point suspension. The gear box gives four speeds and the final drive is of a special type consisting of a dual unit, one part taking the load and the other drives the latter by internal gear-ring and pinion. The chassis has an exceptional clearance and suitable wheel track, and the engine cooling system is thoroughly efficient for hot climates.

Another good 2½ tonner is the Guy. In this the engine and gear box are carried on a sub-frame by three-point suspension. Four speeds are provided and the drive is by spur and bevel gear to the back axle. The system of chassis lubrication is very simple, the springing is admirable and the vehicle in all respects well suited for Overseas work.

The Vulcan exhibit takes the form of a twenty-six seated omnibus of a useful type. The engine is amply powerful, four speeds are provided, and the final drive is by worm-gear. The body is so designed that the bus can be operated by one man performing the dual functions of driver and conductor. The arrangement of windows and ventilators renders the vehicle perfectly well suited for use in hot climates.

Vehicles for Big Loads.

The Thornycroft exhibit is a 40 h.p. tank wagon with a capacity of 1,200 gallons, built for the Anglo-American Oil Company. Just recently a fleet of Thornycroft lorries has gained the distinction of having won for the third time in succession the principal cup offered for competition at the Annual Parade organized by the Commercial Motor Users' Association. The vehicles are owned by a firm of brewers who thus become entitled to the absolute possession of the trophy. The lorries have completed an average of 50,000 miles each during their five years' service, but their condition on parade would have rather led to the conclusion that they were new machines on their way for exhibit at a motor show.

A handsome 50 h.p. five-tonner is shown by Karrier Motors. Features are the four-speed gear-box and the final drive by double reduction spur level gear, also the exceptional comfort and protection afforded by the driver's cab. The chassis exhibited is fitted with hydraulic tipping mechanism, by means of which the load can be tipped in four seconds. Later on, its place will be taken successively by other Karrier models, including the new 22 h.p. 25 cwt. chassis and an extremely well sprung twenty-seated "one-man-operated" bus.

A Big Six-Wheeler.

The largest of all the petrol vehicle exhibits is the Scammell six-wheeler, which, with an engine of 50 h.p., can deal with no less than twelve tons of useful load. One of the outstanding advantages of the Scammell system is that a net load of ten tons can be carried without the weight on any single axle exceeding eight tons. Thus the transport of heavy loads becomes practicable over roads and bridges which would be liable to serious injury if similar loads were taken over them on ordinary four-wheelers. Also, there is practically no limit to the platform area that can be provided on the trailing portion, and hence it is possible to convey really heavy loads of goods that are intrinsically light but bulky.

Before turning to other classes of vehicle, one may be permitted a word of regret that, at an exhibition particularly appealing to visitors from Overseas, there is no vehicle representative of the system of driving all four wheels. The only British concern exploiting this system is The Four-Wheel Drive Lorry Company, of Charing Cross, London. This firm is at present marketing a batch of 4-ton chassis at the extraordinarily low figure of £365. The reason for this exceptional offer is that the chassis were originally made and held in reserve for the British Government. They are, however, identical with the current commercial model and, despite their low price, are subject to the same full guarantee. Undoubtedly, the principle of driving all four wheels is one that deserves very serious consideration, particularly where it may be necessary for the vehicle to run at times across country or on soft rain-sodden roads where a machine of ordinary type is likely to become "bogged".

A Unique Steam Tractor.

The group of steam-driven vehicles include the Sentinel, Yorkshire, Mann, Foden, Garrett, and Atkinson. In this branch the most interesting exhibit is the "Super-Sentinel" 20-ton tractor, which should find a ready demand wherever large loads have to be hauled under bad or indifferent conditions. The sign of this tractor is quite distinctive and the price, which is £800, strikes one as extraordinarily moderate. The various portions of the mechanism are so placed as to give extremely effective weight distribution, which, in a large measure, accounts for the very high hauling capacity of the tractor.

Light Vans and Cabs.

The quite light vehicles exhibited are not very numerous, but include good examples in the Austin, Morris-Cowley and Beardmore. The 20 h.p. Austin chassis with its 4ft. 8 ins. wheel track and ample clearance makes a first class basis for a light commercial vehicle for Overseas use. The same firm also exhibits a 25 h.p. petrol engined tractor of agricultural and general haulage. This sells at the low price of £195 and is shown coupled up with a three-wheeled end-tipping "Dobby" cart priced at £40.

A Morris-Cowley 11.9 h.p. chassis is shown under a highly finished light van body, the complete vehicle selling at £220, and making a very attractive proposition for retail traders of all countries.

The Beardmore "Fifteen" is exhibited with a taxicab body. Large numbers of Beardmore taxis are now in service in London and elsewhere, and have been in use sufficiently long to prove conclusively their reliability and durability, which make them, in fact, better economical propositions than more low priced foreign cabs.

Charcoal as a Fuel.

Finally, users of motor transport Overseas, should make a point of inspecting the Parker Producer Gas Plant, shown on stand 300 in the Palace of Engineering. In its latest form, this plant has been simplified so as to comprise only two main units, which can be very easily mounted one on either side of the dash on any standard lorry. The result is, of course, to make it possible to cut down fuel costs by using charcoal in place of petrol. Even where petrol is cheap, the resulting economy must be very considerable, and in regions where the price of petrol is inflated by transport costs and charcoal is locally available, the advantages of the system are too apparent to need amplification.

Speaking Films.

Mention has already been made in these columns of attempts made in Germany to produce speaking films, and, though the efforts recorded in this regard have possibly not yet advanced so far as is the case in Denmark, it cannot be denied that they are equally promising in their initial stage. The members of the Berlin press association had occasion recently to inspect some speaking films, which represent the result of five years' work on the part of three German engineers, *viz.*, Vogt, Masolle and Dr. Engl, operating together under the style of "Triergon". The inventors have succeeded in reproducing the voice on the film alongside the picture, so that there is a complete synchronization of the two effects. The sound waves are transformed without the use of a membrane into electric waves which serve to make the light of an electric lamp vibrate in accordance with the force of the sound waves. The effect of this vibration again is seen on the film in the form of lighter or heavier stripes with larger or smaller interstices. The demonstrations made are said to have succeeded extraordinarily well; human and animal voices, words and music were equally well heard, without any disturbing metallic chord or accessory sound.

Economics in the West.

London.—The most interesting feature of the annual report of the British Cotton Growing Association is not the actual amount of cotton which was financed and sold by the Association during the year 1923. Neither in point of quantity nor of values did the 12 months show any advance on the two preceding years. The really important sections are those which show the more satisfactory financial position of the E.C.G.C., the enhanced efficiency and extent of the research work carried on under its auspices, and the enlargement of its operations in the direction of supplying administrative help and guidance to growers, especially those of the Dominions and the Colonies. In these varied activities there is the promise of great results in the future. The scientific study of cotton, which has a direct bearing on the development of new fields, is proceeding in many countries of the Empire, and is proving of inestimable value.

There are now many companies and organizations engaged in ginning, baling, and marketing Empire grown cotton. The approximate amount grown last year (excluding India) was 178,200 bales of 400 lbs. valued at £5,500,000. These figures compare with 103,400 bales valued at £2,716,000 in 1922, and 165,100 bales valued at £3,929,000 in 1921. Here is gratifying evidence of progress even though last year the quantity which was financed and sold by the British Cotton Growing Association was somewhat less in quantity and in value than in the two preceding years. The trade in Empire cotton would be greatly benefited and production would be stimulated if the Liverpool Cotton Association, making a concession that has long been desired, would allow this cotton and other outside growths produced from American seed to be tenderable against future contracts.

As hopes of an improvement in the cotton trade next year depend very largely on the extent and price of the crop that is now growing in the American cotton belt, the International Federation of Cotton Spinners propose to send a deputation to the United States in July with the object of obtaining accurate information from the growers. In recent years the reports that have been issued from American sources, including those that have had upon them the official stamp of Washington, have been misleading and have increased the difficulties of a business which grows more intricate and more risky every year. The report of the British Cotton Growing Association draws attention to the significant fact that American mills in the last 20 years have increased their consumption of American-grown cotton from 36 per cent to 61 per cent. If that process should continue for another 20 years America will have no cotton to spare for Europe.

Furniture Manufacture.

Washington is actively exploiting her natural resources of mines, fisheries, and forests. There has been a movement throughout Oregon, Washington, and Idaho to bring home to the inhabitants the fact that high class furniture is manufactured in these States, and that it is no longer necessary (as it was, admittedly, some few years ago) to send their money away to Grand Rapids, Michigan, when desiring something really beautiful in their homes. It was a surprise to most people to learn that the output of furniture in this district for 1923 amounted in value to over 22 million dollars and employed 7,000 workers. The organizers of the "North-West Made Furniture Week", as it was called, revealed the fact that much of the furniture in the retail stores that was supposed to come from the Eastern States was, in reality, made at home. There is all the more credit in the fact that nearly all the material employed is not native to the district; all the finer furniture is made of hardwood, which does not grow on the Pacific slope. The energy with which the movement was taken up and conducted was really surprising. Most of the stores rearranged their entire exhibits to give prominence to the North-Western made products. Prize essay contests were started, advertising was on a most lavish scale, printed matter was supplied to the papers in the smaller towns setting forth in most ingeniously applied statistics, and appeals that were well-nigh irresistible, the necessity for the campaign.

Upholstery Demand.

One of the most interesting products is a fibre furniture which closely resembles rattan. It is made on a wood structure and is said to be more durable than reed or rattan. The fibre is spun from paper-pulp, which is produced from timber grown on the Pacific Coast. The pieces are finely finished and the designs of a type worthy of a place in any house where lighter furniture finds favour. All furniture dealers agree that trade is excellent; one of the largest plants in Seattle is building a new factory in order to double its output,

The North-West is already exporting furniture to ports on the Atlantic Coast. The writer commented to the managing partner of one of these concerns on the fact that some imports of furniture into Washington came from England. The reply was that for "solid comfort" the large, "over-stuffed" English "club" or lounge chair was supreme: in fact, he, a furniture man, had one himself. Another called my attention to the fabric used in upholstering his chairs, which came from Scotland. New buildings are the order of the day throughout Washington. Seattle now possesses, in embryo, a $4,000,000 hotel, which is expected to be ready for occupation by November 1.

State Enterprize!

Estimated figures of the losses incurred by Government trading enterprizes in Australia are contained in a statement issued by the Treasurer of New South Wales, Sir Arthur Cocks.

Sir Arthur Cocks states that the grand total of wasted money, allowing for the profits of some of the Government trading concerns throughout the Commonwealth, is £7,661,988. Calculated on a 6 per cent basis for loans and the renewal of loans the sum represented in annual taxation is £459,719. The largest loss was made by the Commonwealth Government, which sank £2,645,761 on its shipping and ship-building activities at Cockatoo Island, £1,628,895 on war service homes, and £618,000 on fruit pools, making a total of £4,892,656. Presenting the figures for publication Sir Arthur Cocks said that the position disclosed was staggering and a stern lesson to governments of the future.

In regard to the fruit-canning operations of the Commonwealth Government, Mr. Austin Chapman, Minister for Trade and Customs, stated in the House of Representatives that the Government paid more for canning the fruit in many cases than was received for it, without reckoning the cost of the fruit at all. Such a state of affairs could not be allowed to continue, and the growers and canners had been informed most emphatically that the Government would render no more assistance to the canned-fruit industry. There had been an average loss for the three years' operations of about £206,000 per annum. The so-called fruit pools were in reality not fruit pools at all because the Government took all the risk of buying, processing, and selling the fruit.

Reduced Preference on Sugar.

The effect of the Labour Government's Budget will undoubtedly be felt in Natal. The major portion of the sugar exported from South Africa is not pure white refined sugar; it is sugar which polarizes at about 95 or 96 degrees, and the pre-Budget duty was about 22s. 6d. per cwt. South African exported sugar usually goes to the English refineries. The duty now payable on white sugar, *viz.*, 11s. 8d. is less than the figure previously paid on the lowest grade treacle sugar. With the value of the preference reduced to 1s. 11d., the industry in Natal will have to bear the difference of 2s. 4d. per cwt. on an average export, taking the last three years, of 30,000 tons. The sugar crop last year was about 200,000 tons—a record—but the patchy and insufficient nature of the rains makes it improbable that this figure will be reached this season. In view of this fact and the increase of South African consumption, it is not likely that the export will be so large this year.

A new sugar experiment station is to be established in Natal, and Mr. Dodds, the Director of the station, who has been on a tour to decide on the site, says that the plantations generally appear to be in a flourishing and promising condition. Comparing the Natal industry with that of Cuba, Mr. Dodds points out that in Cuba the advantages are much greater, and although labour costs are practically equal much less work is required in the Cuban fields. He thinks irrigation is the key to successful expansion in Natal. There is plenty of warmth but an occasional lack of moisture. "I would urge Natal growers," says Mr. Dodds, "to hasten slowly. South African consumption should be watched, and met as it expands, but for the time being there should be little effort to export. Attend to the home market first, and before going in for export bring down the cost of production."

Confectionery Machinery.

The reliability of British-made machinery for the manufacture of confectionery and chocolates is well known throughout the world. Every department of sugar-confectionery and chocolate production has its specialized machinery manufacturers, boiling, cutting, breaking, wrapping, packeting, being all provided for by reputable British plant-makers. The preserve manufacturing trade is also equally well provided with machinery-makers, whose pans, machines, etc., have acquired a deservedly high reputation. Doubtless many of the Overseas manufacturers and merchants interested in the confectionery, chocolate, and preserving industries who visit this country during the British Exhibition will take the opportunity of

inspecting the productions of British machinery-makers, either at the makers' works or in the English confectionery-manufacturing works. A recent item of interest in machinery-making circles is the amalgamation of three well-known makers of confectionery and preserve plant.

The exports of confectionery from the United States during 1923 amounted to 9,773,778lbs., valued at $2,013,944. A large proportion of the total quantity exported was sent to Canada and Latin American countries, Cuba in particular. The United Kingdom received two-fifths.

Italian Oilfield Development.

An agreement has been concluded between the Italian Government and an American corporation to develop the Italian oilfields. The corporation is authorized to drill for petroleum throughout Emilia and Sicily and has to complete its preliminary investigations within three years and spend a sum of 5,000,000 lire on them. If the investigations are successful, an Italian company, with a capital of 40,000,000 lire, will be formed. The board would consist of 12 directors—six representing the foreign capital invested, four the Italian capital, and two the Italian Government. The necessary machinery, if Italian industry is not in a position to supply it, may be imported free of duty. A considerable quantity of the petroleum obtained will be reserved for purchase by the Italian Government at a reduced price.

Kenya Sugar Project.

Four Mauritius sugar financiers, headed by Mr. F. A. Nichols, are now here discussing a scheme to invest £150,000 in the erection of a factory near Nairobi. The original intention to erect a factory was modified after the discovery that the farmers in the vicinity were unable to plant the 15,000 acres necessary unless they were financed. Mr. Nichols approached Sir Robert Coryndon, proposing that the Government should ask for £150,000 from Empire development loans to be used for the erection of the factory with British machinery, allowing the use of the Mauritius money for financing the farmers. Fifteen settlers have already guaranteed to cultivate the area if assisted. The capacity of the factory would be a thousand tons daily. The Colonial Office is considering the matter.

Encouragement of Native Industries.

By the terms of a recent law the importation free of customs duty of a number of raw materials utilized in native industries in Turkey has been authorized for a period of three years. This exception, however, is applied only to the actual requirements of factories established in Turkey. The principal articles affected are the following:—Manila hemp, jute, cotton yarns, Australian wool, merino and cheviot wool, mercerized threads of all kinds, cotton used in carpet making, arsenic, oxide of mercury, antimony, tin, bicarbonate of potash, hyposulphite of soda, sulphuric acid, nitric acid, magnesium sulphate, barium sulphate, raw rubber, borax, carbonate of soda, caustic soda, ammoniac, alum, palm oil, coconut oil, sulphate of soda, copra oil, gum lac, tinplate, ox hides weighing over 15 kilos, calcium sulphate, resistance wire, mica, copper salts, nickel salts, silvered copper wire, brass, tartaric acid, glycerine, paraffin, bicarbonate of manganese, zinc carbonate, white phosphorus, red phosphorus, red ochre, yellow ochre, sodium sulphate.

The Labour Budget and Sugar.

Writing on the first Budget proposals of the Labour Government in this country, the *International Sugar Journal* claims that it reveals no revolutionary changes, but has turned out the sort of measure that might have been expected from a Liberal, if not a Conservative, Government of twenty years ago. An attempt has been made to reduce taxation, and nearly all classes, except the actual income-tax payers, have received some small measure of relief. The greatest alleviation has, however, been reserved for the consumer of food who has, in the recent past, been taxed to an admittedly excessive extent. He will now be asked for some 28 millions less per annum. Unfortunately for the sugar-producing industry of the Empire, nearly 18 millions of this is to come off the sugar duty, since Mr. Snowden, the Chancellor of the Exchequer, has decided to reduce this tax by more than half—that is, for sugar exceeding 98° polarization the duty is cut down from 25s. 8d. per cwt. to 11s. 8d.; or, per lb., from 2¾d. to 1¼d. Mr. Snowden announced that, for the present, the Government has no intention of departing from the existing statutory scale of preference, *viz.*, the granting of one-sixth rebate off the sugar duty to sugar produced within the Empire, though they reserved the right later on to review the question afresh.

Where the sting lies, our contemporary goes on to say, is in the fact that by reducing the amount of the duty so drastically, the Government have cut down the monetary value of the preference to an exceedingly small sum; the home beet sugar experiments have to be content with 11s. 8d. per cwt. instead of 25s. 8d. as previously, while the Colonial sugar producer will now get only 1s. 11⅓d. per cwt. or five-twenty-fourths of a penny per lb.

Indian Economic Notes.

We publish in this issue an excellent article on Sir Asutosh Mukherjee by Sir B. K. Bose of Nagpur, C. P. We owe it to the courtesy of the " Hitavada " of that city.

Bengal Glass Works.

The Bengal Glass Works, Limited, the registered office of which is at 39/1, Canning Street, Calcutta, are making a vigorous and a not altogether unsuccessful attempt to compete against German, Belgian and Japanese imports. From the end of the March quarter until the present time the works have by means of an extra spurt, made considerable and appreciable headway; to such an extent, indeed, that the managing agents, Messrs. Ebram Peer Mahomed and Company, have decided almost under compulsion, to add another furnace in order to meet the pressing demands of the company's patrons, European as well as Indian. When so much is being written and said now-a-days about the encouragement by government of indigenous industries it would not surely be asking too much if we requested the Medical Stores Depot and the Indian Railway Companies to enquire whether it would not be possible and advantageous for them to secure their glass-ware requirements from this company, the productions of which are in no sense inferior to the imported articles of similar nature. The white glass half-globes for household use as electric light reflectors, excellently finished and equipped with suspensory chains, are recently added features that speak eloquently of the company's capacity. The Calcutta works are incorporated with the Peer Mahomed Glass Works of Bombay.

An Economic Survey.

Mr. T. C. Goswami has given notice of the following resolution which he intends to move at the September Session of the Legislative Assembly :—

Whereas it is more urgent to institute a general enquiry into the economic condition of the various classes of the population in India both to prevent progressive deterioration in their physique and their standard of life and to ascertain whether they can bear the burden of taxation at present imposed, this Assembly recommends the Governor-General-in-Council that he be pleased to suspend the Taxation Enquiry Committee, which is unsatisfactory both in its personnel and its terms of reference and to appoint a committee in its place for a close enquiry into the general conditions of economic life and labour in reference to the resources of the country and the estimate to the national income.

International Advertising Convention.

Financial circles in London have carried a particular interest in the International Advertising Convention held at the British Empire Exhibition from July 14 to 19. The Financial Advertisers' Association in the United States sent a very large delegation to London among whom are many of America's leading bankers and financial experts. In a recent letter to London, the President of the Financial Advertisers' Association, Mr. Gaylord S. Morse, of the State Bank of Chicago, expressed the hope that when in London the delegates " may be privileged to hear some of Europe's outstanding bankers, as well as one or two prominent American bankers who are also recognized as advertising experts". One of the chief American speakers at the Convention on banking and financial advertising is Mr. Francis H. Sisson, Vice-President of the Guaranty Trust Company of New York. The Convention this year is under the patronage of the Prince of Wales. It is expected to draw to London a total of some 8,000 delegates from the British Isles, the Dominions, Colonies and other countries. Of the Overseas delegates over 1,500 are expected from America alone.

Madras Glue Factory.

The Madras Government accept the recommendation of the Retrenchment Committee that the Glue Factory should be closed and that further experiment to prove that glue can be manufactured at a commercial profit should be abandoned. They are satisfied after a further examination of the position that, as held by the Retrenchment Committee, the difficulty of manufacturing glue on a samll scale at a competitive rate and of finding a market for the product cannot be overcome by continuing the present experiment. The Director has therefore been requested to disband the staff and to submit proposals at an early date for the disposal of the building, plant and machinery and the stock on hand.

Assam Paper Mills, Ltd.

A Syndicate, headed by the Maharaja Bahadur of Mymensingh, was formed some time ago and a sum of Rs. 100.000 was raised to help in the reconstruction of the Assam Paper Mills, Limited. A site, a convenient and commodious one, has been secured at Shamnagar, and the machinery is being removed and stocked there under safeguards.

The building of the factory will, we are informed, be commenced immediately.

WORKMEN'S COMPENSATION ACT.

Following the footsteps of British and American Mill-Owners, the Bombay Mill-Owners' Association have decided not to entrust insurance companies with the work of meeting the liability imposed under the Workmen's Compensation Act. Instead they have worked out a mutual insurance scheme known as the Mutual Insurance Association and have registered as a Limited Company. It will have no capital and therefore no shares but its members will contribute to its funds a yearly premium in the proportion of the total wages paid by them to their workmen. Workmen, including clerks, drawing salaries below three hundred a month, will be insured against accidents. From their own experience the mill-owners of Bombay have found that it is far cheaper to carry their own risk than to give it to the Insurance concerns. Seventy per cent of the local mill-owners have already joined the proposed organization.

THE COLLECTION OF STATISTICS.

The Bill to provide for the collection of statistical information which is to be introduced at the next session of the Bombay Legislative Council is re-published *in extenso* in the May issue of the *Labour Gazette*, published by the Labour Office. The Bill has been framed with the object of facilitating the collection of statistical information principally in connection with matters pertaining to labour questions in the Bombay Presidency. It has been modelled on the lines of the most recent legislation on the collection of statistical data and at the same time its provisions have been made suitable to conditions in this Presidency. India, as pointed out in the Statement of Objects and Reasons, is now almost alone among the chief Industrial countries in being without legislation for the collection of statistics. The principle of providing compulsory powers for the collection of statistics has been recognized in all countries of industrial importance, and no less than 17 countries have legislation for this purpose.

INDIA IN ENGLAND.

In the Indian Palace at the British Empire Exhibition there is a perfect reproduction of the famous Ajunta wall paintings. Ajunta is a ravine in Hyderabad where, over two hundred years before Christ, the Buddhists made temples in the caves, safe from the attack of wild animals and marauding tribes of men who did not hold the Buddhist faith, and painted on the walls of these caves some of the most marvellous pictures ever done in the history of the world.

Visitors to the Indian Palace at Wembley can see exactly what these caves are like, and study the frescoes without having to undergo the hardships necessary to the traveller who journeys to the caves themselves. It is upon the traditions left in these caves by early Buddhists that the famous school of modern Indian art, founded by Sir Rabindranath Tagore in Calcutta, has based its work, much of which will be seen in the Bombay Court, and in the Indian room at the Palace of Arts. It is the first time in history that Europeans have been enabled to see what Indian art is really like. Mukel Dey, himself a student of Sir Rabindranath Tagore, and one who has taken the pilgrimage in person to the actual caves has carried out the mural decoration. India has made up its mind that here at least the visitor to Wembley will see the real thing. He will find himself looking upon designs that the western eye has ever seen before.

Indian Paper Industry.

The Tariff Board examined on June 23, representatives of Upper India Couper Paper Mills Company, of Lucknow. The Company was started 45 years ago and has a capital which is held practically by Indians. All the directors are Indians.

The Company claimed for the paper industry protection by means of an increase in import duty on finished paper and pulp to the extent of 30 to 40 per cent. If, after imposition of this protective duty, foreign manufacturers reduced their rates, enhanced duties were suggested. The Company feared that as a result of protection foreign mills might establish themselves in India, and the witnesses pointed out that in case of such foreign enterprize capital as well as directorate should be at least two-thirds Indian. In the course of further examination witnesses admitted that as the Company had paid handsome dividends and bonus to shareholders during the last few years, their case for protection lost some force, but they urged that the industry needed protection only for a temporary period.

Notes from U. S. A.

Washington.—Even in the land of Yankee ingenuity where such inventions as the radio, undreamed of a little while ago, have already become the plaything of every schoolboy, the New York papers recently gave a thrill to their readers by printing half a dozen photographs transmitted over telephone wires from Cleveland, 522 miles away. Faces, city streets, public buildings were reproduced with few exceptions as faithfully as though the negatives had been delivered in the usual way and the day now seemed at hand when photographs by wire would form a regular and essential part of all wire news services.

One test made in the presence of newspapermen in New York showed how quick and reliable the new process is. The picture was snapped on the street in Cleveland at 3 : 38 New York time. At 3 : 58 it had been developed from the negative and transformed into a positive ready to go on the drum of the Cleveland transmitting machine. It was put on the drum wet, as it had come from the fixing bath, the time that would have been required for drying it having been saved.

At 4: 01 the drum in the Cleveland machine and the synchronized drum in New York began to revolve, thus starting the process of registering the picture in New York. At 4 : 06 the completed negative was off the drum in New York. At 4 : 11 it was completely developed. A period of 33 minutes had thus been required between the click of the camera shutter in Cleveland and turning out a completed negative of the picture in New York.

The success of this and other tests led to the announcement that it was expected that the Republican National Convention in Cleveland and the Democratic Convention in New York would both be "covered" with the new invention. But the future commercial development of the service will depend upon whether the demand for it is so extensive as to permit its operation at a low charge to each subscriber.

The apparatus used has been under active development about eighteen months by engineers of the American Telephone and Telegraph Company and of the Western Electric Company. In its present form, according to the Company's formal announcement, it "represents the association of many recent inventions together with standard types of telephone and telegraph apparatus which have been readapted to this new use."

A positive transparency film supplied by any photographer is suitable for transmission without intermediate process, and can be used for transmission while still wet, thus eliminating delay for drying. The present apparatus is designed to transmit a picture five inches by seven in about four and a half minutes. The picture is received in such form that after photographic development of the usual sort it is ready for newspaper or other reproduction. Line drawings, printing and hand-writing also can be transmitted.

The film upon which a picture has been transferred from a negative is inserted in the transmitter on a cylinder. The cylinder and film are rotated at a uniform speed and at the same time are caused to advance by means of a screw mechanism. During this operation a very small and intense beam of light is directed through the film to a photo-electric cell within the cylinder. Through rotation of the cylinder, and its forward motion on the screw mechanism, the motion of the concentrated light beam on the film is much the same as that of a phonograph needle on an old-fashioned cylindrical record. In this way minute and regular portions of the film are covered by the light beam and the shading of the film affects the intensity of the light passing through it and reaching the photo-electric cell. This variation in the amount of light striking the sensitive surface of the cell gives rise to a current which, by means of a vacuum tube amplifier and modulator, controls the current flowing through the telephone line.

The picture is now on the wire, being transmitted progressively as the cylinder turns. At the receiving end is another cylinder, which is exactly synchronized to the sending cylinder by means of tuning forks through which a low-frequency current runs at each end of the line. On the receiving cylinder is an unexposed film on which an ordinary beam of electric light is converged to a minute point, the entire apparatus being in a dark room.

Before striking this film, however, the receiving light beam passes through a "light valve", which is new type of shutter. This is simply a tiny aperture, behind which is stretched a wire. This wire, which almost closes the aperture, is vibrated by the light-controlled current from the sending apparatus, so that its movements break the steady light

beam directed on the aperture or valve, thus controlling the light which passes through the valve to the rotating film.

The process is automatic, the turning cylinders completing their forward motion at the same instant. The receiving film is then lifted from its cylinder to undergo ordinary photographic developing.

Exports of American Manufactures.

Exports of domestic manufactures from the United States in the fiscal year 1924 which ends in June will materially exceed those of the fiscal years 1923 or 1922. While they will not of course equal those during or immediately following the war they will apparently exceed those of the fiscal year 1923 by about $200,000,000, and those of the fiscal year 1922 by more than $400,000,000, and will also be much greater than in any year preceding the war. The latest figures on the exports of manufacturers, says the *Trade Record* of the National City Bank of New York, show that the exportation of the two great groups "manufactures ready for consumption" and "manufactures for further use in manufacturing" aggregated $1,564,000,000 in the nine months ending with March 1924, against but $1,344,000,000 in the same months of the preceding year, and if they continue at the same rate during the remaining three months of the current fiscal year they will aggregate about $2,086,000,000 for the fiscal year 1924 against $1,883,000,000 in the fiscal year 1923, and $1,623,000,000 in 1922. This prospective total for the year 1924 is double that of the year preceding the war.

This big gain in the exports of manufactures in the current fiscal year makes itself especially apparent in the increased movement to those sections of the world to which manufactures form the bulk of American exports. To Asia, for example, the total exports of the 9 months ending with March are $452,000,000 against only $327,000,000 in the corresponding months of the preceding year, to Oceania $116,000,000 against $87,000,000, to South America $206,000,000 against $189,000,000 and to North America as a whole $785,000,000 against $750,000,000. To Cuba which takes largely of American manufactures the total is $145,000,000 against $112,000,000, to Australia $96,000,000 against $69,000,000, while the totals to nearly all of the countries of the non-manufacturing world show greater or less increases in the 9 months of the current fiscal year when compared with the same period of last year.

Panama Canal Tonnage and Suez.

The Panama Canal made its highest record in 1923 and it now exceeds in net tonnage that of the Suez Canal. The official record of the Panama Canal shows a steady and rapid growth in its use as a highway for commerce, the net tonnage of vessels passing through the canal having advanced from 4,000,000 tons in 1915, the first full year of its operation, to 10,000,000 in 1920 and 24,737,000 in 1923, against 22,730,000 passing through the Suez.

With all of the 15 Pacific countries to which the Panama Canal brings the eastern frontage on the United States into closer touch, American commerce, says the *Trade Record* of the National City Bank of New York, has shown an enormous increase, far greater than that with other parts of the world. The total trade with Japan, for example, in the calendar year 1923, was $611,000,000 against $161,000,000 in 1913, the year preceding the opening of the Panama Canal; with China $296,000,000 against $65,000,000 in 1913; with Australia $160,000,000 against $54,000,000; with New Zealand $41,000,000 against $14,000,000; with the Philippines $127,000,000 against $46,000,000; with Hongkong $37,000,000 against $14,000,000; with Chile $123,000,000 against $46,000,000; and with Peru $39,000,000 against $18,000,000 in 1913. With the 15 Pacific countries and colonies which were brought closer to the Atlantic frontage of the United States by the opening of the Panama Canal American trade in 1923 was $1,532,000,000 against $460,000,000 in 1913, an increase of 233%, while the increase in trade with other parts of the world was but 70%. With the western coast of South America alone the trade in 1923 showed an increase of 163% over 1913, while that with the other parts of South America shows an increase of 95% in the same period.

Loftiest Photo Ever Taken.

A photograph of the surface of the earth taken from the highest altitude at which any such photograph has ever been made is now on exhibition at the War Department in Washington. The picture is of Dayton, a city of 150,000 population in Ohio, and was taken from 32,220 feet, or more than 6 miles above sea-level. Although the usual ground haze was present when the picture was taken, it is exceedingly clear in definition, and automobiles and street cars can be distinguished in the streets six miles beneath the camera. This result was accomplished by use of a

"minus blue" ray filter, which cuts out the blue light of the ground haze. Super-speed film was used, enabling the employment of a very deep ray filter, giving exceptional clearness. As the temperature was 62.5 degrees below zero Fahrenheit when the picture was taken, special electric warming devices had to be used for the camera as well as for the aviators.

The use of ray filters to cut out ground haze makes it possible to take pictures of equal clearness at any practicable altitude, Army Air Service experts say. The haze occurs up to an altitude of from 8,000 to 10,000 feet, above which the atmosphere is exceedingly clear. The problem is merely one of using a camera with focal length sufficient to get a clear focus on an object six miles or more away. The airmen say that with a focal length of 20 inches they could take a clear picture of the ground from a height of over nine miles.

Five Miles of Records.

More than 6,893,000 individual histories must be examined and checked to provide the data upon which payments are to be made and more than 167,000,000 separate, *under the Soldiers' Bonus Law recently enacted in the United States*, documents must be handled, many of them many times, before payments can be assured to the veterans. The documents are all stored in 7,000 solidly packed steel filing cases that placed end to end would stretch out to more than five miles.

Some idea of the complications that must be met may be gained from the fact that the army files alone contain the records of 50,328 Smiths who served during the war; 40,101 Johnsons; 28,902 Browns and 27,938 men named Williams. In countless cases initials and even the first and second names are identical, yet the records must separate them one from the other and to each give his proportionate benefit computed on the actual service he rendered in the war. Another complication lies in the fact that 23 per cent of all these 5,000,000 potential claimants cannot read nor write the English language. A corps of interpreters, having among them knowledge of almost every tongue, must be included in the great office force to deal with the analysis of the records.

Warnings of Forest Fires.

Arming fire fighters with instruments to determine the approach of dangerous atmospheric dryness is the latest move by the Forest Service, United States Department of Agriculture, in combating forest fires, it was brought out at the recent Forest Research Conference in session at the Forest Products Laboratory, Madison, Wis.

Fire fighters and fire wardens have always suspected "something in the air" that permitted a creeping ground fire to leap into the tree tops and sweep everything before it, and according to forest-fire specialists one way to detect and prepare for this mysterious agency is through records of the relative humidity or atmospheric moisture. The Berkeley, Calif., fire in 1923, which started as a grass fire, and the historic ones at Cloquet, Minn., in 1918 and at Hinckley, Minn., 1894, that devastated immense forests and destroyed many towns and human lives, all occurred at periods of extremely low relative humidity, when forest fuels were highly inflammable.

Now the Forest Service and the private timberland protective associations in Washington and Oregon are providing their fire fighters with sling psychrometers to determine the approach of periods of low relative humidity, in order to mobilize men and supplies against the fire danger.

The ability to predict dangerous fire weather, even a few hours in advance, is, according to the research specialists, a safeguard of high value.

Successful Milk Campaign.

By starting with a community meeting in every one of 24 communities in the county, a very successful milk utilization campaign was carried on in Benton County, Iowa, through the efforts of the home demonstration agent and the State milk utilization specialist. A total of 9,986 persons was reached through these meetings, each of which included a trained local woman speaker, a program arranged by the community school, and the judging of milk posters made by the school children.

The local farm bureau co-operated with the school in arranging meetings, and a health playlet, pageant, or song was given by each school as part of its program. Such titles as "The Queen of Foods," "Doctor and Patient," "Fairies of Health land," "The Carpenters' Union," and "Dr. Milk Bottle" show the type of entertainment given. A business men's club offered prizes of 50 cents and 25 cents for the best and next best posters in each school, and prizes ranging from $5 down to $1 for the best posters when all the winners in the county competed with each other.

Another feature of the milk utilization campaign, according to a report received by the United States Department of Agriculture,

was a survey of the children in the county to learn how many did or did not drink milk and how many were accustomed to drinking tea and coffee. Every town in the county had one or more exhibits in store windows, emphasizing the value of milk in the diet. The home demonstration agent furnished the suggestions for these exhibits and the local people carried them out. Lodges, business men, physicians, the Red Cross, the farm bureau, and the schools all gave valuable assistance in the campaign and helped to make it a success.

In connection with the follow-up work after the campaign was over, a milk booth was set up at the county picnic, and was patronized by hundreds of visitors.

THE IMPERFECT VISION OF AMERICANS.

Nine out of every ten adult persons in the United States have imperfect vision, and according to the Eyesight Conservation Council of America, out of 42,000,000 people gainfully employed in the United States, no less than 25,000,000 are handicapped by defective vision. According to the National Committee for the Prevention of Blindness: incomplete reports tend to establish the fact that at least one child out of every ten in rural as well as city schools has seriously defective vision.

To remedy the condition as so disclosed by recent investigation of these two national organizations, a general nation-wide campaign of education has been undertaken to acquaint the public with the facts. In the second place these organizations aim to effect definite reforms in lighting conditions everywhere, to force industrial leaders and officers in educational institutions to see that the people in their charge are adequately protected, and to provide the public with specific information which will enable each individual to cope with its own eye handicaps.

UNITED STATES LACE IMPORTATIONS.

Compilations of the National City Bank of New York show that the value of lace imported from Europe by the United States since the beginning of the fiscal year 1900 is in round terms $756,000,000, and if to this is added the duties paid when the merchandise was withdrawn from the custom houses the total would approximate and perhaps exceed a billion dollars. Meantime as a result of the growing demand for this class of merchandise the manufacture of laces has been established in the United States and American lace factories now turn out laces of an annual value nearly as great as that of the laces imported. The forty odd lace factories of the country, which now represent an investment of over $30,000,000, turned out in 1921, the latest year for which official returns are available, $26,000,000 worth of laces, while the imports of the entire group "laces, embroideries, etc." in that year were $27,000,000, indicating that domestic production is now about equal to the importation.

This $750,000,000 worth of laces which have entered the country since 1900 comes chiefly from Europe and, in far less quantities, from the extreme Orient. In 1920, the year of the biggest imports since the beginning of the war, imports of the official group, "laces, embroideries, etc." were from France alone 11½ million dollars, Great Britain nearly 8 million, Switzerland 5 million, Germany 1½ million, Italy 1⅓ million, China 2⅓ million, Japan 1¾ million, and from Madeira 2⅓ million dollars worth. Curiously, but a very small share of the silk laces imported come from the Orient, the chief silk producing section of the world, since of the $7,532,000 worth of silk laces, embroideries, etc., imported in the high record year 1920, 5¼ million dollars worth were from France, 1¼ million from the United Kingdom, and less than a half million from Japan and China, the chief silk producing countries of the world. Most of the laces imported from the Orient are of cotton. Apparently silk and fibre laces are making more rapid gains in popularity in the United States than those of cotton. The official figures of imports of the entire group "laces, embroideries, etc." show an advance in those of silk and fibres from $7,850,000 in 1912 to $9,626,000 in 1923, while those of cotton show a fall from $38,100,000 in 1912 to $17,014,000 in 1923.

A Correspondent writes:—I have seen a remarkable new invention of a young Indian from the Bijnor district of the United Provinces. It is a self-filling fountain-pen, without a cap. The inventor is Mr. Prem Narayan, and he has already obtained British and American patents. The pen may be taken from the pocket, the nib propelled from or returned to the barrel, and the barrel refilled with ink, leaving the fingers quite clean, with one hand only. To those who are busy, or lazy, or physically disabled, the pen should be invaluable. Mr. Prem Narayan, who gives his first name to the pen, is now endeavouring to put it on the market, and is seeking capital to establish a business enterprize.

Canadian Trade and Finance.

Montreal, June 1st, 1924.—So much has been said about the necessity for mixed farming and crop rotation in Western Canada, if the land is not to deteriorate beyond hope of reclamation, that the views of Mr. C. H. Peterson, as set forth in a series of articles being published in the Canadian Pacific Railway's Monthly Bulletin on Agricultural and Industrial Progress in Canada, are worthy of broad circulation. Mr. Peterson, who is himself a practical farmer, is editor of the *Farm and Ranch Review*, published at Calgary, Alberta.

It is his belief that previous theories in regard to soil deterioration must go by the board in the light of experiments with supposedly worn out land, with which he was directly concerned. This soil was found to contain a greater amount of plant food than adjoining virgin prairie land, and his explanation is that the destruction of British and New England soils, upon which previous experiments were largely centered, has not been due so much to continuous cropping, as to heavy rainfalls, which dissolve and suspend the mineral salts, and cause them to be carried off—to the ocean, ultimately. He quotes figures of the yield of wheat per acre over a period of years, in the semi-arid portions of Oregon and California, to show that this action does not go on to the same extent in the sub-humid or "hard wheat" districts of the West, where the one-crop farmer abounds.

Mr. Peterson does not minimize the importance, both present and prospective, of the livestock industry, nor of the type of small farms which produce dairy products and poultry, but he distinguishes between the areas which are typically suited for cattle raisers or for the small farmer, and the areas where the production of hard wheat seems to be the line of endeavour which will bring the best results over a period of years. We quote from the third article of his series:

"The hard wheat area will, of course, produce other cereals and livestock, but new settlers, who wish to specialize in dairying or other branches of animal husbandry, would generally prefer to settle in the foothills or in the more northerly portions of those provinces where conditions are more favourable and natural shelter plentiful. Furthermore, in the highly developed wheat-producing districts there is little or no pasture available within reasonable distance, so that combining wheat-growing with dairying or stock-raising is at present a somewhat limited possibility. At any rate even where the settlers have the capital and favourable environment to embark in mixed farming and dairying, it takes time to effect the change. And most of the wheat growers are still in the pioneer class and follow the lines of least resistance in their farming operations."

"Grain is the natural and obvious line of production of the pioneer farm. It gives the quickest cash result with the smallest cash outlay, even though it is the most speculative form of agriculture. It is idle to expect any early radical wholesale change from the present system of farming within the "hard wheat" area, and it may be open to serious doubt whether it is economically wise to promote propaganda having for its object any widespread departure on the part of farmers there from the crop, which is admittedly grown to perfection, and upon which those sections of the West hold almost a world monopoly. I am not advocating the "condensed" milk, "canned" vegetable and "packing house" bacon farm. Every farm should produce, to the greatest possible extent, everything consumed there, and as a matter of fact, most wheat farms do."

Mr. Peterson closes his article somewhat as follows:—

"We come to the conclusion that practically straight wheat production is a strictly legitimate and scientifically correct system of farming over a large part of the Western prairie section. Also, that it is economically sound and will always constitute the backbone of Western export agriculture. Further, that it is worthy of a prominent and permanent place in our farming system and of the most intense development possible along sound, scientific lines. The economics of wheat production should receive the most careful investigation at the hands of our technical experts, and the line of investigation should adhere closely to discovering new systems of culture with a view to preserving moisture, and to reduce the cost of production by saving labour and increasing yields.

"I sincerely hope that no one will attempt to read into this article any argument against general development along the lines of intensified agriculture in the West, or against the desirability of enriching Western or any other soils through the use of natural or artificial fertilizer or by plowing under green crops. On the contrary, these are ideals and practices we must always promote. But we should clearly

recognize, that in a country of such vast extent, no hard-and-fast rules or theories can safely be entertained."

"This year Canada takes her place as the world's greatest wheat exporting country. We have been climbing up year after year and we are now on the top rung of the ladder. Western Canada will develop at a rapid rate and our wheat acreage will expand to a greater extent than those of other wheat exporting countries."

"It is idle to minimize the over-production menace. The importing countries of the world require between 500 and 700 million bushels of wheat annually. Obviously, with Canada's exportable surplus reaching even present dimensions, the keenest competition will face us. It will be a case of the survival of the fittest. I honestly believe that Western Canada will prove the fittest in point of cost of production and transportation, which will be the determining factors. We may face an uncomfortable period of readjustment, but our farmer will do his share and the transportation interests must do their part."

"A study of world wheat prices is encouraging. Apart from the period between 1885 and the outbreak of the Great War, and short periods during the seventeenth and eighteenth century, world wheat prices at present average about as low as they have for three hundred years. Taking into consideration the low purchasing value of present-day currencies the world over, it is unthinkable that wheat can depreciate further in value to any considerable average extent. We are on the eve of the introduction of labour-saving devices in prairie farm operation. I predict that our harvest expenses will be tremendously reduced within a few years. Compared with Europe, our land is cheap and our taxation low. We enjoy a monopoly in quality. We have small reason to fear the future."

Prices.

In spite of the natural tendency of Canadian prices to follow those of the United States, our price level during the last year and a half has moved within narrower limits than the price level of our neighbours to the South. The rise which accompanied the increased business activity of 1923, culminated in both countries in April of that year, since when, with the exception of a recovery in the Autumn months, the trend has been distinctly downwards in the United States. In Canada, the Index Numbers for January and February of 1924 revealed an increase, but the decline which has since taken place has brought the Canadian price level to a point where the increase over 1913 is substantially the same as in the United States.

The widest publicity is now given to price movements in the United States, and the business public, keen to gauge the trend, study the Index Numbers with considerable care. The situation is such that a price movement up or down can for a certain time be largely psychological. Over-production in certain industries results in a decline in the prices of the products concerned, and a slight fall in the general Index Number. It comes to be the opinion that this decline is the forerunner of a general easing-off in prices. Buying is curtailed, and especially as between wholesalers and manufacturers, is limited to current necessities. While the supply of goods in the hands of the trade throughout the country may become less than normal, the clearly visible supply in the hands of manufacturers may assume larger proportions. Price concessions follow. The expectation of a decline in prices has actually induced a decline.

Eventually, buying commences to broaden. Firmness in the quotations for certain lines is given publicity. It comes to be believed that the decline is over and that a rise is quite probable. Desire to purchase on a basis which is now thought to be favourable leads to an expansion in buying; and the expectation of higher prices actually results in higher prices being recorded.

While production on a large scale, and the availability of ample supplies of goods in most lines, has no doubt been partly responsible for the recent recession in U. S. prices, psychology as well has entered into it, along the lines we have been referring to above. Bearing in mind the large consumptive power which exists in that country, and the exceptionally easy credit conditions which prevail, we may look for greater stability within a reasonably short time, a state of affairs which would result in an improvement north as well as south of the boundary line.

Statistics showing the movement of the Index Numbers in recent months, in Canada and the United States, are given below:—

	Canada	United States
1913	100	100
1922	152	149
1923	153	154
1924 Jan	156.7	151
Feb	156.8	152
March	154.3	150
April	151.1	148

Men of To-day.

M. Herriot, France's New Premier.

"The one characteristic above all," writes Mr. Ronald Atkinson in the *Sunday Times* concerning M. Herriot, the new Prime Minister of France, "which has won the respect of opponents as well as colleagues of the able Mayor of Lyons is his unswerving adherence to principles.

"From poverty he worked his way up the educational ladder by his own efforts to become one of the most widely read and most cultured of French politicians, a brilliant writer, as well as a soundly-reasoning speaker, and though many dazzling temptations of office have been held in front of him, he would not accept when it meant the possible sacrifice of principles.

"It may smack of national conceit to employ the comparison, but the best impression of the man is conveyed to English readers in saying that M. Herriot, among French politicians, has the greatest resemblance to an Englishman. In some respects he makes one think of Mr. John Burns, but he is not so rugged, and up to now has not shown a similar forcefulness in debate. M. Herriot has never dominated the Chamber of Deputies by strength of personality like M. Poincare, M. Clemenceau, or M. Briand."

Mr. Slocombe, too, in the *Daily Herald*, has some interesting things to say about M. Herriot. He remarks:—

"M. Herriot is a professor of liberal education, a courageous and pacific-minded man, and an ardent supporter of the League of Nations. From the first he has been opposed to the adventure of the Ruhr, even though he has never thrust the whole weight of his convictions and of his Party into the balance against it.

"He believes that peace can be made with a democratic Germany, and he greatly doubts the wisdom of leaving even a handful of French troops in the Ruhr. But whether he is bold enough next month to renounce explicitly the alternative guarantees, the haggling conditions and the threat of sanctions insisted upon by M. Poincare as a preliminary to the evacuation of the Ruhr, remains to be seen.

"There is a cynical phrase in France, born of much bitter experience with Parliaments, which runs: "Plus ca change, plus c'est la meme chose." (The more it changes, the more it remains the same.) It would be folly to place too great faith in the Radicals (they have governed France before, and their theories have not changed), but with the powerful aid and criticism of the Socialists at home, and the disarming friendliness of Mr. Macdonald abroad, there is a light upon the European horizon which has not been seen since the war."

"Control of affairs in Lyons has brought us into relation with most foreign nationalities. Lyons, the Manchester of France, is the Free Trade metropolis in which consumers themselves are partizans of a bold foreign policy. Our Chamber of Commerce asks for the renewal of relations with Russia. That shows in what a large spirit working for appeasement we shall deal with international problems. In other words, what Lyons thought yesterday France thinks to-day," said M. Herriot in an interview while he also stated to a representative of the *Matin:*—

"I have studied Britain thoroughly. We want the British to feel and think like us, but that can never be. The British and the French are different, and to some degree complementary of each other. We are two free and strong nations who should be united but we have achieved freedom by different methods—the French by principles and declarations, the British by the progressive practice of individual rights which are, to a certain extent, for them the public expression of their sense of the comfortable."

"Let us understand Britain," M. Herriot continued. "The financial situation in Britain is good; ours is lamentable. On the other hand, her economic future is uncertain, while ours is brilliant. France is far from having exhausted her resources throughout the world. Britain, in reality, is one of the great victims of the war, during which America fortified herself, and her Dominions have become economically autonomous. Let us, therefore, understand the needs and difficulties of Britain. Let us admire her fiscal courage, which it was a pity we did not imitate during the war."

Books in Brief.

Short Reviews of Recent Books.

Asylum Directory for 1924.

The Lawrence Asylum Press Almanack and Directory of Madras and South India, 1924.—Published by Messrs. Chakravarti & Co., Post Box No. 271, Madras. Price Rs. 8.

We must congratulate Messrs. Chakravarti & Co. on the enterprize and intrepidity they have shown in bringing the 1924 edition of the Asylum Directory, the oldest of its kind in all India. They deserve praise because they have had to reckon with competition, local and other. The present edition is full of useful, accurate, and up-to-date information of every kind, all well arranged and well digested. The old maps, we note, have been restored, and the "Who's Who" has been carefully done. The binding and general get-up leave little to be desired.

Nava Ratna Mandir, Indore.

Vasanta Press, T. P. House, Adyar, Madras.

This is a handsomely got-up book describing the Inauguration of the Nava Ratna Mandir, at Indore, by H. H. The Maharaja Holkar of Indore. The book is issued by Mr. G. S. Arundale, Educational Advisor to the State. The letterpress is restricted to description, while the pictures speak for themselves. The Nava Ratna Mandir is a special building for housing the portraits of all the greatest men and women in the world, irrespective of religion, race or colour, with a Library containing biographies and autobiographies of great people. The illustrations are excellently done and the book is well worthy of perusal. We note that in the main wall of the Picture Gallery is the portrait of the far-famed Sri Ahilya Bai.

Employment of Disabled Men.

Published by the International Labour Office, Geneva. Price 4*sh.*

This contains not only the report submitted to the experts on the subject of the employment of disabled men, but also the minutes of proceedings of the meeting of experts and the resolutions adopted by them. The Resolutions are printed at the end of the volume and include resolutions on the following:—Fundamental principles and essential provisions to be included in all legislation. The fundamental principle is thus set down:—The experts are definitely of opinion that it is pre-eminently the duty of the State to assume complete responsibility for the means of livelihood and welfare of those disabled during the war, and are further of opinion that such responsibility may be discharged by introducing legislation and otherwise devising means whereby disabled men shall be enabled to find employment and so contribute to the fullest extent of their capacity towards national production. A Report that should be carefully studied and digested by all interested in the employment of the disabled.

General Report of the Survey of India for 1922—23.

Survey of India Office, Calcutta. Price 2*sh.* (or Rs. 2).

This Report, as usual, is full of particulars as to what is being done by the great Survey of India for mapping out this country. Its work, though silently done, is one of the most arduous ever undertaken. For nearly a hundred and twenty-five years, the Survey (in one form or another) has done an amount of work which merits the highest praise. To compare the conditions to-day with those prevailing in 1800 and before it in regard to maps is to write the history not only of the Department but also the history of India in a way. The work of Lambton (the centenary of whose death, we incidentally note, was celebrated on January 20, in a befitting manner at the headquarters of the Survey of India at Calcutta and Dehra Dun), Mackenzie, Waugh, Walker, Thiilvler, has been continued on unassailable lines, by a succession of officers of the highest ability; Col. C. H. D. Ryder, C.B., C.I.E., R.E., the present head of the Survey, is to be congratulated on last year's work. We note that Sir Aurel Stein's explorations in Chinese Turkistan and Kansu in 1900-01, 1906-08 and 1913-15 have resulted in four geographical maps of these areas on the 2/M scale.

Municipal Engineering.

By H. P. Boulnois, M.INST.C.E., etc. Published by Sir Isaac Pitman & Sons, Kingsway, London. Price 2*sh.* 6*d.*

Mr. H. P. Boulnois deserves to be complimented on the production of a tiny little book of 100 pages which is packed full with information from cover to cover. It is both practical and suggestive. In the hands of our Municipal Engineers, it ought to prove highly

useful. Lay Councillors of Urban and Metropolitan Municipalities in India ought to study books of this kind—easily read and digested, for they are non-technical and brightly written—if they are to discharge their work both intelligently and efficiently. We heartily commend the books to the Municipalities of India.

Tirukalukunaram (Pakshi Thirtham).

Published by M. M. Kumaraswami Mudaliar. Price 12 Annas.

A popular handbook to a famous place of pilgrimage. Its illustrations add to its value.

Bengali Religious Lyrics—Sakta.

By E. J. Thompson and A. M. Spencer. Association Press, Calcutta. Rs. 1—4—0.

A real attempt at presenting living religion in one part of India—Bengal. The work has been done with care and attention. As becomes a volume of the "Heritage" Series, it is both scholarly and lucid.

The Origin of Christianity.

By Swami Satyananda. Published by L. Chakravarthi, Calcutta. Rs. 3.

A book of the type of Jaccolliat's. In one sense, it ought to be welcomed, for it shows how all religions can be reconciled, if not in every detail, at least in fundamentals.

The Kenya Problem : By Rt. Hon'ble V. S. Srinivasa Sastri, P.C.

Aryabhushana Press, Poona. 12 Annas.

Striking speeches on a much debated subject. Will be read by many with avidity in their present form.

Perfumery and Essential Oil Record,—Year Book and Diary for 1924.

Published by Messrs. W. J. Bust & Co., Ltd., London. Rs. 4—8—0.

As usual, full of useful information and well suited for desk use.

Life of Lord Reading.

We understand that Sir Isaac Pitman and Sons, London, will shortly publish a "Life of Lord Reading" written by Syed Sirdar Ali Khan, Postmaster-General in Hyderabad State. The author is a well-known writer on Indian affairs and has several volumes to his credit, including "The Life of Lord Morley" published recently. The new volume will deal more particularly with Lord Reading's career in India, with special reference to the question of restoring the Berars to Hyderabad State. Copies of the book will be available at the Standard Bookstall, Elphinstone Street, Karachi.

India.

Mr. F. J. Bryant, I.C.S. (Retd.), has writte a book on 'India'. In reviewing it, the *Manche ter Guardian* says:—Here is another Angl Indian who evidently dislikes and distrusts th tendencies he sees at work around him, but ha come to recognize that he is powerless to contr them. He therefore decides to make the best o a bad job and painfully endeavours to assum an attitude of benevolent, if critical, detach ment. He sees that the Indian will not acquies in any status short of absolute equality. Gener Smuts has taught him to recognize the immens difficulty of reconciling the cultural interests o the white and coloured people within th Empire. Agreeing with some prominent India extremists, he is impelled to doubt whether it i to our own interests, to maintain the connectio with India. He respects India's desire to solv her own problems in her own way, an would have us be ready to consider any pro posals that will conduce to a lasting friendshi between Britain and India without detrimen to the commercial and other interests of th former country.

Survey of India Maps.

We would invite the attention of our reader to the advertisement appearing in this issue o the *Journal* to the publications of the Surve of India—especially maps, which have world-wide reputation. We have been favoure by this Department with a few of th thousands of maps they have issued and thes happily belong to the Mysore State and th border districts of Madras Presidency. Th maps, needless to state, have been laid out wit the utmost care and are of various scales an prices are, to use an expressive trade phrase to suit every pocket. The maps are in colour and ought to prove invaluable to every perso who desires to know this country or any part o it with any degree of accuracy. Th Department has issued "Catalogue of Maps" priced One Rupee, which is a veritable mine o information to any one desiring further in formation on this subject. Departments o State would do well to order for copies of thi Catalogue and study the same for placing thei further orders for the maps required by them Applications for maps should be made, we may add, to the Officer-in-charge, Map Record and Issue Office, 13, Wood Street, Calcutta.

The Swiss National Council has approved the ratification of the Opium Convention by 118 votes to two.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

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The Outlook in Mysore.

By A. R. Banerji, Esq., C.S.I., C.I.E.,*

Dewan of Mysore.

As I have more than once stated in this Assembly, Mysore has unlimited natural resources for industrial development. All the mineral wealth of Mysore has not yet been completely exploited. But the results of exploration so far achieved are sufficient to yield to Mysore a high place among countries fraught with immense possibilities for industrial expansion. In addition to gold and iron, Mysore is found to possess valuable chrome and manganese in an abundant degree. There are indications of the existence of other rich minerals, which when discovered, will practically bring about an industrial revolution in Mysore. Attempts are being made to develop the Mysore mineral resources on sound commercial principles which, while not stifling private enterprise which has done so much for Mysore in the past, will also give the State a larger share of the returns. I hope to be able to make a definite announcement on the subject at the next session of this Assembly.

TRADE BALANCE INVESTIGATION.

In my speech before the reconstituted Economic Conference in June last, I stated: "It is a principle of Economics that the trade prosperity of a country is to be gauged by the excess of its exports over the imports.....Tested by this principle, the condition of Mysore trade is far from satisfactory..... It is therefore necessary to safeguard the country's interests in commerce by securing the balance of trade on the right side and to keep the exports increasingly on the ascent....." It is proposed to pursue this matter further, and with this object in view, Government are considering the question of constituting a strong Committee of Experts to carefully investigate into the matter and suggest measures for a definite policy for adoption by Government.

Hydro-Electric Schemes.—In addition to mineral wealth, Mysore has immense scope for the further development of hydro-electric schemes. The Sivasamudram Project, combined with the Krishnarajasagara Project, benefits the industries only in Mysore, Bangalore and the Kolar Gold Fields. The Mekadatu waters, in respect of which Madras has given over her rights to Mysore, on certain conditions, will have to be utilized in the near future, to meet the growing demand for power from the Kolar Gold Fields and other industrial enterprizes. The Malnad has even more possibilities for industrial development. There is considerable scope for starting a match factory, paper industry, sugar factory, mineral industries and so many other important industries which will require cheaper power. The question of harnessing the Gersoppa Falls for the generation of electric power has long been under the consideration of Government. Recently, a special survey of this important project with reference to the power prospects, etc., was ordered and the report of the officer-in-charge has just been received. This is a scheme entailing a very large outlay, which, if carried out, will open up the Malnad to high industrial enterprize, and will enable the Bhadravati Works to develop a number of subsidiary industries. The scheme will be thoroughly investigated from all standpoints

* Part of Address to the Representative Assembly, 10th October 1924.

during the current year and I hope to be able to make a statement about it in this Assembly in the next year's Dasara session.

BHATKAL HARBOUR.

In my Address to this Assembly last October, I made a reference to the project for the construction of a harbour at Bhatkal on the West Coast. I said that the project had not been abandoned and that when funds should be available the Shimoga-Arsalu Railway line would be the first railway project to be resumed with a view to extend it further to the West Coast. The question of the Bhatkal harbour and of the railway line from Shimoga to the Bhatkal Port has not made any progress during the past year, chiefly because Government are not in a position, for want of funds, to actively pursue these schemes at present.

The State is considerably handicapped for lack of direct and easy communication with the West Coast to which it has to get its own natural outlet. It must greatly facilitate the commercial and industrial development of the State if a direct communication along the nearest route is provided to a harbour which will be open all the year round. Further, the construction of the Shimoga-Bhatkal Railway and the development of the Bhatkal harbour will lead to the opening up of the Malnad country, which possesses abundant natural resources hitherto largely undeveloped, and the economic condition of which is at present very unsatisfactory.

The development of the Bhatkal harbour will not adversely affect any other British Indian port on the West Coast of India. On the other hand, the harbour is likely to promote the development of the adjacent coastal tracts of the Bombay Presidency. We look to the Government of India to grant us the necessary facilities that would enable us to take up these projects as early as our finances permit. These are :—

(1) Permission to construct a railway to the port from the Mysore frontier, a distance of about 14 miles ;

(2) the lease, for the purpose, of an area of two square miles of land and foreshore, in perpetuity or for a term of 99 years with option of renewal ;

(3) grant of the strip of land required for the railway line.;

(4) Cession of jurisdiction over the land and foreshore required for the railway and the harbour.

With the development of our Iron Works and discovery of other valuable mineral resources, the success of the harbour project is assured.

SUBSIDY.

In my Address to the Assembly at the last budget session I referred to the general scheme proposed by the Government of India for rebate of subsidies or tributes paid by Indian States to the extent that the total military expenditure of a State together with the subsidy exceeds fifteen per cent of its gross revenues. Excluding items of revenue of a special kind, such as income from debt and commercial services and royalty on gold and other minerals, the gross revenue of the Mysore State may be taken at 267 lakhs, fifteen per cent of which comes to about Rs. 40 lakhs, while the military expenditure including the subsidy amounts to Rs. 53 lakhs. With the contemplated re-organization of the Military Forces this will raise to about Rs. 57 lakhs. The claim of Mysore to rebate of Subsidy on the basis indicated by the Government of India has been placed before that Government. It is not possible for me at this stage to make any statement indicating the nature of our representation on the subject, but it is sufficient if I state that unless the heavy burden on our finances which was imposed over a hundred years ago is re-adjusted with due regard to the general question of the contribution towards the military defence of India by different parts of the British Indian Empire, Mysore finances will continue to be crippled. The Mysore case is now before the Government of India and let us all hope that it will be dealt with in a spirit of broad statesmanship and justice.

Customs.—Again, by reason of Mysore having no seaport of her own, the British Indian Government is in a position to levy customs duties on all foreign goods imported into the State. At the time of the Rendition, customs duties were quite inconsiderable as the policy of the British Government then was avowedly one of Free Trade. Since then, the classes of articles on which duty is levied have been increased to so considerable an extent and the rates of duty so greatly enhanced that the drain on Mysore through this channel has now grown to an extent seriously crippling the taxable capacity of the people and the resources of the State. As in the case of the salt duty, Mysore has no voice in the levy of customs on foreign goods imported into the State, and the entire customs revenue on the goods consumed in the State forms another indirect contribution by the people of Mysore to Imperial revenues. Recently

the Government of India have definitely adopted the policy of developing Indian industries by a protective tariff, and have appointed a Tariff Board to investigate the claims of the several industries that demand protection. It has to be seen how far the interests of Indian States and their subjects, both as producers and as consumers, will be safeguarded under such a policy, shaped or at least largely influenced by powerful industrial and commercial interests in British India, and Mysore has urged the need for joint deliberations in respect of the settlement of all such questions in future. This leads us to the question of the future position of Indian States.

THE FUTURE POSITION OF INDIAN STATES.

There are many questions in which the actions and policy of the British Indian Government vitally affect the Governments and people of the Indian States whose interests are inextricably mixed up with those of British India. The outlook is changing rapidly in British India and if the position of Indian States remains as it is, it is no exaggeration to say that their interests will be seriously prejudiced. We have to constantly urge for the introduction of such measures in any new scheme of constitutional changes that may be brought into existence sooner or later as would give a right place to Indian States from which they can exercise their voice in respect of all matters vital to their interests and future progress. This problem is being seriously studied and suitable proposals are being formulated to ensure that Mysore secures her rightful place in the councils of the British Indian Empire.

CONCLUSION.

The Mysore State which has a glorious past and a record of solid progress behind it has, in the year of my review, been adjusting herself to the new conditions created by the Constitutional Reforms. The popular voice is making itself more felt in the Government of the country and mutual adaptation between the Government and the governed is a matter of every-day concern to both. Amidst these conditions the administration of the year marked the beginning of a new era.

The future is sure to bring forth fresh and more difficult problems. Our larger development schemes require further capital outlay for which, additional resources have to be found. The insistent demand for the spread of Primary Education has to be met and suitably financed. The Mysore University has to be developed according to the growing needs of the country. Larger grants will be necessary under the essential services to the people, *viz.*, Medical aid, Sanitation, Water supply, Village and Town improvements, irrigation projects, improvement of communications, etc. Our Railway policy requires further expansion. Industrial development necessitates larger expenditure on experiments and investigations. With our present heavy commitments due to our past development policy initiated at the time when the State had to its credit large accumulated savings, there is no immediate prospect of embarking upon any new projects or schemes, at any rate, before the financial position is so improved as to secure a substantial annual surplus. The Government have directed all their energies during the past three years to find ways and means to meet the heavy demands on account of some of the larger projects still remaining unproductive and it was with great difficulty that the standard of administration has been maintained with our available resources, although the position that had to be faced was one of the recurring deficits. The current year's budget indicates the limits of advance rendered possible by a general improvement in our financial position but the popular demand has not been satisfied and the country will ask for larger and larger expenditure on those departments, the administration of which tends to the material and moral progress of the people. The Government of His Highness the Maharaja are keenly alive to the needs of the situation and trust that the affairs of the State will so shape themselves in the near future that there will be no hindrance to the orderly progress and expansion for which Mysore has justly earned a reputation in the past. We confidently look to the Imperial Government for sympathetic treatment of the Subsidy question. We earnestly hope that the Mysore Iron Scheme will soon begin to yield a return. We are anxious that year to year, the administration may be able to meet the growing needs of the country as well as to satisfy all possible popular aspirations. From you, as the chosen representatives of the people, we expect greater association with our aims and endeavours and I feel confident that our united efforts will ensure a steady and cautious policy of expansion and development which will bring increased prosperity, contentment and happiness to the subjects of His Highness the Maharaja.

Norway has increased its duties on imported motor cars to 25% *ad valorem*.

India's Economic Problems.

By Sir Basil Blackett.*

This is not perhaps the occasion for a long speech on the economic problems of India, but I hope I may be allowed to touch on a few of them. A member of the Government of India gets very infrequent opportunities of addressing a public audience, at any rate when the Assembly is not sitting, and I am always so delighted to pay a visit to the business and commercial centres of India that I may be excused if I take this opportunity to say a few words on subjects of vital interests to everyone of us in India.

On the thorny subject of exchange, I have little to add to what has already been said and to the speech I made on this subject in Bombay last December. Though much has passed since then and though in many directions there are hopeful signs that the time for the restoration of the gold standard in India and other parts of the world is drawing rapidly nearer, we shall still, I think, be well advised to proceed cautiously and watch developments elsewhere before finally taking action here. If recent happenings in the political sphere in France and Germany lead to a comprehensive settlement of the problems of the Ruhr and Reparation, the way will be clearer for currency stability both here and elsewhere.

Stringency in Money Market.

There are, I believe, many people who hold that the stringency in the money market, which was so pronounced during the last busy season, is the result of the refusal of the Government to stabilize the rupee at 1s. 4d. gold. I am afraid I cannot agree with them. If they will but reflect that at no period during the last busy season did the exchange value of the rupee rise to the level of 1s. 4d. gold, how can they think that the Government could have stabilized the rupee at 1s. 4d. gold except by measures involving some contraction in the currency? And a contraction in the currency would surely not have decreased stringency in the money market. What the Government did was to secure the passage a year ago of an amendment to the Paper Currency Act increasing from 5 to 12 crores the amount of emergency currency which could be issued to the Imperial Bank against *hundis*, a facility which was fully availed of during the busy season. In addition, so far from contracting the currency during the winter, the Government themselves issued 12 crores of paper currency against sterling securities purchased by the Paper Currency Reserve in London out of the proceeds of remittances. Even supposing for the sake of argument that exchange could have miraculously reached 1s. 4d. gold without special measures for the contraction of the currency in India, it could not have risen so far beyond that as to reach the gold import point and enable those who required additional currency to obtain the equivalent issue of paper currency. It is, therefore, abundantly clear that no measures for the stabilization of the rupee at 1s. 4d. gold could have contributed to the mitigation of the stringency in the money market, and that it was only because they had refrained from listening to the advice of those who urged them to stabilize the rupee at that figure that the Government of India were able to do something for that relief of stringency for which the same critics were loudly calling.

The Root Cause.

But even fixity of exchange in relation both to gold and sterling cannot, as our experience before the war shows, remove the cause of monetray stringency. For a more far-reaching remedy we must look to an increase in the amount of new savings in India, *i.e.*, in the amount of new capital within India herself, so that the supply may be more nearly equal to the demand, for it is a shortage in the supply of capital which is at the root of the difficulty.

The steady extension of the business of banks such as the Central Bank on sound lines, leading the way to an extension of banking facilities throughout India in a way that will link up the indigenous banking system with the bigger banks and the Imperial Bank, and provide India with a financial machinery adapted to the genius of the Indian peoples, offers to my mind one of the most promising prospects of eventual relief from the difficulties of seasonal stringency. Stringency in the money market has its root in the facts of nature. In a country which is predominantly agricultural, more currency is necessarily required in those periods of the year when crops are being harvested. In India the recurrence of a period of three months during the summer when the monsoon is with

* Part of a Speech made at Calcutta.

us and activity of all sorts is necessarily restricted by weather conditions adds a further and special seasonal influence. During those three months the demand for currency is reduced to a minimum and the monsoon thus increases the wideness of the margin between the amount of currency and credit required when activity is at its maximum and the amount required when activity is at its minimum during the year. It is absolutely inevitable that money must be cheap during the summer months in India. During that period money must be kept liquid in order that it may be available for use in the winter and spring. Something can be, and has been, done in the direction of providing for emergency issues of currency at the periods when demand is strong. They increased the amount of currency required for the movement of the cotton crop and the dearness of cotton manufactures reduced the demand for piece-goods, the sale of which in the agricultural districts normally serves as a means of bringing the currency back to the centres. In addition, the demand for bullion was smaller than might perhaps have been anticipated. I am not sure, however, that the stringency last winter and spring was not accentuated by the very fact that the Government were known to have passed the new Act allowing them to increase the amount of emergency currency issued against *hundis* and were known to be desirous of mitigating stringency so far as possible. If one of the results of the provision of emergency facilities is to lead to the locking up during the summer by banks and others of funds which they would otherwise have kept liquid for use in the winter, the emergency provisions can contribute nothing to a solution of the problem, and we are just as well off without them.

Government's Intentions.

I am not here to make any pronouncement as to the intentions of the Government. They are carefully examining the lessons to be drawn from the experience of the last twelve months which, as I have already indicated, may perhaps be regarded as exceptional. They are of course prepared to make full use of the existing provision for the issue of emergency currency against *hundis* and of their further power of issuing currency against sterling securities in the paper currency reserve purchased out of the proceeds of remittances. It may be that this latter method is capable of extended use. The limited number of *hundis* available to the Imperial Bank makes it difficult to extend the former in present circumstances. But, as I have said, Government action cannot possibly provide a complete or final solution. The natural man always tends to demand cheap money, and he is always ready to criticise the powers that be when money is not cheap. He finds it difficult to realize, in spite of the lessons of the last ten years, that in the long run unduly cheap money always means inflated prices and consequent social and industrial evils. It must be the duty of the business world and, in particular, of the banks to do their part in keeping sufficient funds liquid in the slack season to ensure themselves against being caught short in the busy period.

Expansion of Banking Facilities.

The expansion of banking facilities will do much to ease this position. It is not only by an increase in the quantity of currency in circulation that an increased demand for it is met. If, in one part of the country compared with another, currency tends to circulate half as fast, the amount of currency required in that part is twice the amount which is required in the other part. It is not possible unfortunately to devise any sure method of securing that redundant currency shall be withdrawn at the moment it ceases to be required. While up-country currency circulates slowly and a larger amount of it is needed, it circulates more rapidly when it comes back to the business and money centres of India and a smaller amount is required. Precautions are required to ensure that the extra currency used up-country when crops are moving shall, when it returns to the centres, either be withdrawn at once or prevented from circulating with that rapidity which is normal to currency in these centres. It is the function of the banker to immobilize some part of this currency in Calcutta, Bombay, etc., during the slack season in order to keep his resources liquid against the period of stress. If, in addition, banking can spread gradually up-country, it will be able to render an additional service by increasing the rapidity of circulation in the up-country districts and thereby tend to make the rate at which money circulates more even as between the mofussil and the banking centres. In course of time it will thus provide both up-country and in money centres an agency practised in the art of regulating the flow of currency.

Among the services which the Central Bank has rendered to India, possibly not

the least pregnant with results for the future has been its absorption of the Tata Industrial Bank. If this amalgamation can be made by careful and sound banking to secure the building up of a single bank stronger than the two banks could have been, individually and in separation, an important step will have been taken in the banking sphere to enable banking to keep pace with the industrial progress of India. The Imperial Bank of India is opening new branches all over India in accordance with its agreement with the Government, but that is not enough. In order to enable the Imperial Bank to take its place in the banking system of India, other strong banks are needed alongside of it, to enable it to develop its functions as the Bankers' Bank, which were among the purposes which those who supported the amalgamation of the Presidency Banks had in view. The Central Bank of India will, I hope, take a foremost place among these other strong banks.

Short Deposits.

Not very long ago we were discussing in Simla the measure which is now the Steel Protection Act. That Act marked a new departure in the history of Indian industry. It marks a definite and deliberate effort to build up a strong industrial India to take its place side by side with agricultural India. If the hopes of those who have acclaimed the adoption of protection by India, are to be realized, parallel efforts must be made to improve our technical education and technical equipment both in industrial matters and in the sphere of banking and finance. The machinery of Indian industrial finance must be improved *pari passu*. I had occasion during the debates on the Steel Protection Bill to draw attention to what seems to me to be a real weakness in India's financial machinery for industrial purposes. Far too large a proportion of the capital used by industrial concerns in India is obtained on short deposit. This leads to many evils. An industrial concern ought not to be in the position of being liable to have to repay to the lender on demand or at short notice any part of its capital which it has locked up in bricks and mortar and plant, or which it requires for the purpose of day-to-day working capital. So long as it runs the risk of a sudden demand to repay deposits, an industrial concern, however well managed and however adequate its rates of profit, may be forced to close down by some unforeseen monetary development leading to a general demand on the part of depositors for the return of their money. The habit of using short deposits to provide capital for industrial concerns has the further disadvantage that it restricts the supply of good industrial securities—shares, preference shares, debentures—available for the ordinary investor, and unduly narrows the market for such investments. Further, the deposit habit is to my mind injurious also to the growth of banking in India. An industrial concern which is taking considerable sums on deposit is really doing banking business and of a kind for which it is not equipped and in which it is not experienced. At the same time, the banks, who are the natural middlemen for the management of money on short deposit and ought to be skilled in the problems of maintaining liquid reserves and judiciously making short-term loan, find their natural business unduly restricted. Finally, the losses which must inevitably occur in a crisis or a panic owing to money lent on short deposit being locked up in fixed capital assets must tend to frighten many Indians both from investing in industrial shares and from putting their money on deposit with a bank or anyone else at all. If the machinery of industrial finance is to keep pace with the demands of modern times in India, this habit, which is sanctified by long years of practice, will have to be modified.

Post Office Cash Certificates.

Again, the development of banking in India is required with a view to increasing the capital available for industrial and development purposes in India and generally for the proper mobilization of Indian capital resources. I need not here enter into the question of the encouragement of the flow of foreign capital. Foreign capital which is likely to come into India in the next decade cannot be nearly as much as India needs. Even if foreign capital were available in larger quantities than seems probable, we have still to face the vital problem of increasing the amounts and availability of Indian capital in India itself. The Government have been doing what they can to provide special facilities for the small investor both through the co-operative movement, through the post office savings bank, and through the post office cash certificates. Statistics of the latter are very encouraging. In the twelve months ending the 31st of March 1924 the net receipts from post office cash certificates were Rs. 529 lakhs and in the two months April and May 1924 the net receipts were 77 lakhs which compares with a figure of 80 lakhs in the corresponding

period of the previous year. It will be seen from this that the stimulus given to these certificates by the attractions added to them on the 1st April 1923 has not lost its strength. Although the rate of interest for those who hold the cash certificates for the full period of five years is 6 per cent and, therefore, somewhat higher than the rate which the Government of India now have to pay for their rupee loans, it is not proposed at present to reduce the attraction of the post office cash certificates. It would be a pity to disturb the growing popularity of these certificates and the benefits to be obtained by an increase in the number of people who invest in them and in the amount of capital saved by their means outweigh the extra cost of continuing the higher rate for the present.

NEW RUPEE LOAN.

Finally, before I sit down let me say a word about the new rupee loan. The continuance of the programmes of capital development, both of the Central Government and of the Provincial Governments, depends primarily on the people of India being willing year by year to subscribe for rupee loans on a scale very much larger than was customary before the war. There is, of course, always the possibility of resorting to an external loan in London or elsewhere, but if this can be avoided as we have avoided it this year, India clearly gains by being the full owner of the railways or irrigation works or other works of public utility on which the money has been spent instead of having to some extent as it was to mortgage the undertakings to lenders in London. The amount of the loan for which we are asking this year is 15 crores only. An official announcement has been made recently. This means a reduction of 9 crores asked for a year ago and a reduction of 5 crores on the figure tentatively suggested in my last budget speech. We have been able to reduce our demand on the money market mainly because of the continued inflow of money into the post office cash certificates. The amount required, therefore, is a modest one, and I have no doubt that it will be readily subscribed. A year ago we issued the same long-term loan at 95 which we are this year issuing at 99. Short-term ten-year bonds were issued last year at 97 and the same bonds are being issued at 98.4.

The opportunities for getting Government security at a high rate of interest are gradually passing away in India as in England and with the improvement in our general financial situation I look forward to being able in future years to obtain rupee loans on still better terms. Meanwhile, I can confidently recommend the forthcoming issue both as a satisfactory investment and as an opportunity for Indian capital to further the development of India's heritage.

The Coconut Pearl.

We note from Dr. F. W. T. Hunger's paper what he has to say on "The Origin and Nature of the Coconut Pearl". This is a subject on which the Continental cocologists, the Dutch especially, have written with knowledge and interest about, Dr. Hunger as much or more, than anyone.

There are occasionally coconuts known in the Malay or Java languages as "blind" coconuts, as they are without germinating pores. Although regarded as sacred, Dr. Hunger succeeded in collecting eight unopened "blind" nuts, as he associated this absence of germinating pores with the presence of the pearls.

Most of the nuts secured were very old, scores of years according to their owners. Of these, the first four opened produced nothing, but in the fifth he found a really beautiful pearl still attached to the kernel. The next two produced negative results, whilst the eighth remains unopened.

This discovery, Dr. Hunger goes on to say, warrants the inference that the coconut pearl actually represents a calcified haustorium. The origin and nature of the coconut pearl as a calcareous plant germ might be botanically considered as analogous to a phenomenon met with occasionally in human and animal pathology in the petrification or mummification of the embryo, and termed *Lithopœdion* and *Lithoterion* respectively.

Japan's foreign trade in the first two months of 1924 shows an increase, over the corresponding period of 1922, in the excess of imports over exports, which this year stood at 298 million yen and last year at about 90 millions.

The Indian Cotton Excise.

By Mr. S. Subbarama Aiyar, M.A.,
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The maxim, "Heaven helps those who help themselves", seems to be as much true of God's scheme of life as that of the British administration in India. The Bombay Millowners' Association has just issued two pamphlets—one giving a short history of the 'Excise Duty on Cotton Goods' and the other on 'Why the Cotton Excise Duty should be Abolished'—presumably with a view to acquaint the members of the Legislature, the Executive and the general public with the genesis and the necessity for the revocation of the excise duty on cotton cloth. It is somewhat tragic that after nearly thirty years of agitation the Millowners should have to flog a dead horse, but Fates have decreed that it should be so.

After detailing in the first pamphlet the circumstances which led to the imposition of this duty in 1896—how it was imposed at the instance of Lancashire interests backed by the Secretary of State in the teeth of the dislike and even opposition on the part of the Indian Government and Indian public opinion—and quoting several representative opinions of successive Finance Ministers and of responsible members of the Indian Legislature showing up the iniquitous nature of the import and drawing attention to the promise made by the Government of Lord Hardinge in 1916 that "the duty would be abolished as soon as financial conditions would permit" as well as to the opinion of the Fiscal Commission which made in 1921 a unanimous and considered recommendation for the abolition of the cotton excise duty, the second pamphlet of the Bombay Millowners proceeds to discuss the arguments adduced by the Government in favour of its retention. In 1896 the main plea was to countervail the import duty on cotton cloth in the interests of "free trade," in 1911 it was to protect the handloom weaving industry, while in 1924 the need for a source of taxation which cannot well be given up is given as the main reason. After showing the hollowness of these reasons the Millowners sum up their demand as follows:—"If the revenue which the cotton excise duty now brings in is necessary to the country it should be obtained by means of an equitable tax, and every possible source of taxation should be closely investigated by the Government in order that the pledges which have from time to time been given on their behalf with regard to the remission of this generally hated import might be redeemed."

Nobody likes to pay a tax, however equitable, good or necessary it might be and in judging the Millowners' plea for the abolition of the tax, one has to view it on general principles with special reference to its incidence and its effect on the development of the Indian cotton industry, in short whether the tax impairs the *faculty* of the State. As regards the burden of the tax we read as follows in the pamphlet:—"In the first six years of its imposition the cost to the industry averaged Rs. 13 lakhs annually, but during the last six years the cost has averaged Rs.186 lakhs per year or roughly 14 times as much. During the latter period the duty has been equivalent to an annual tax of over 5 per cent on the paid-up capital of the whole of the mills in British India and has in effect placed a tax of about Rs. 150 per year on every cotton powerloom in the country." This is fairly heavy. It is further pointed out that "the effect of the excise duty is to increase manufacturing charges by 8.75 per cent—a very serious item when competing with mills in independent States which purchase their cotton at the same figures as mills in British India".

The Fiscal Commission took some pains to demonstrate that the incidence of this tax falls on the consumer and not producer (para 144). "In India", writes the Report, "although about two-thirds of the cotton cloth consumed is locally produced, the imports are the main factor determining prices.....In the case of this commodity, therefore, the excise duty falls on the producer, who is, however, able to meet it from the enhanced price that he obtains for his goods owing to the duty on imported cloth." Even assuming that the price of foreign cloth is the main factor determining the Indian price, it is rather difficult to follow the above argument. If the producer at the Indian mill is able to raise the price to the full extent of the tax, the tax falls on the consumer and not the producer; if he is not able to do it, as it may well happen when the price of foreign cloth, even after paying the import duty, is such that it can be marketed more cheaply than the Indian mill product, the tax would

fall on production and not on profits. If we are to believe the statistics supplied to us in this pamphlet, the Indian mills are to-day face to face with this latter position on account of Japanese competition. Not only is gone for ever the large and lucrative export trade in yarns and cloth with China and Japan—once important customers of Indian Mills—but even in the home market there is danger from Japanese competition at the present time. "With an adequate supply of efficient and cheap labour," this pamphlet informs us, "working their mills for 22 hours per day, with many and various forms of direct and indirect State aid such as loans at low rates of interest, the cost of production in the cotton mills of Japan is much lower than in India, and these factors combined with special concessions in regard to freight rates have enabled Japan not only to enter but even to undersell Indian-made products in the Indian market in spite of the import duty of 5 per cent on yarn and 11 per cent on cloth. In June of this year, Japanese mills were selling 20s. yarn, the staple product of Indian mills, at 18 to 18½ annas per lb in Bombay. The Indian mills, at the price of cotton which existed at that time, could not produce a decent quality of 20s. yarn at anything under 18½ annas. Japanese drills at the same date were selling at Re. 1—5—0 per lb, a price at which Indian mills could hardly manufacture similar goods, let alone make any profit."

If it be objected that in spite of the excise duty the cotton industry has developed since 1896, the consumer is, in the words of the pamphlet, that "it could hardly fail to do so with the natural advantages of a cotton crop of 5 million bales, and a consuming public of more than 300 millions in India alone; but its development can hardly be considered even satisfactory when one considers that three-fifths of the cotton grown in the country in 1922–23 was exported and manufactured into yarn and cloth in foreign countries, and when the powerlooms of the country produce only enough cloth to supply one-third of the cloth purchased annually by the inhabitants of this country."

If as we have heard it said the mill-owners have no real grievance in that they were declaring enormous profits in recent years in spite of the duty, the answer is that the circumstances were somewhat exceptional in post-war years and they are not likely to continue. If the excise duty is merely meant to be a tax on *profits*, it ought in justice be remitted where there is no profit or when the mills are working at a loss. In any case the best method of taxing profits is by means of Income and Super-taxes and not an excise.

It is also well known that an enormous charge falls on the mill industry in other ways. Sizing, dyeing, and finishing materials are assessed at 15 per cent and since 1922 machinery at 2½ per cent. According to the Millowners' estimate "the total taxation paid by mills in the form of excise duty on cloth and import duty on mill stores is nearly 260 lakhs of rupees per year and this on a paid-up share capital of Rs. 36 crores is equivalent to a tax of 7.2 per cent which is probably at least 5 per cent more than any other major industry is called upon to pay."

If the handloom industry is to be protected, the best method would be, not to tax mill cloth, but to encourage the production of more yarn in Indian mills, to remove the import duty on yarn and finally to help the handloom weavers to form Co-operative Societies which would enable them to buy their raw materials at reasonable cost and in sufficient quantity and to dispose of their products at a reasonable price. In the opinion of the Fiscal Committee this would help the handloom industry for more than the continuance of the excise duty (para 171).

In view of its past history and the present competition from Japan and the essential inequality of the tax on mill-made cotton cloth as a source of excise revenue, one has no hesitation in condemning the cotton excise and recommending its abolition. The grist to the financial mill is not, after all, much and it will not be impossible, if necessary, to re-adjust the tax system to make up the loss. It is not at all wise, politically, to continue this tax in the teeth of responsible Indian public opinion.

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In opening recently the Lascar Memorial Lord Lytton paid a high tribute to the loyal and devoted services of the Lascars during the war. His Excellency said that Bengal's contribution to the manning of ships was remarkable. Not only did she man her ships in Calcutta and Chittagong but sent crews to Egypt, Natal, Great Britain and Cape Colony in addition to a large number of men to Colombo, Rangoon and Bombay. In other words Bengal supplied a complete crew for over three hundred ships during the war. The monument perpetuates the memory of 832 Lascars from Bengal and Sylhet who laid down their lives in the service of the Empire.

New Industrial Power.

By Sir Robert Hadfield, Bt., F.R.S.

The modern world is on the threshold of a considerable revolution in the employment of industrial motive power, as a result of the threatened exhaustion of fuel supplies under the pressure of ever-growing consumption, and the tendency is to return to the use of those natural forces upon which our remote ancestors had to depend. It is, therefore, not fanciful to anticipate that the windmill, the sailing ship, and the water-mill may yet come to be more representative of the motive forces of the future than the coal-furnace and the coke-oven.

This, at least, is the direction which the discussions of the First World Power Conference at Wembley will take. As is usual with great events in the World of Science, the holding of this momentous Conference, attended by the leading engineers and scientists of Europe, the Dominions, America, and the Far East, is, it is feared, not receiving the notice it deserves from the general public, and yet the ultimate effects of its deliberations may be to change the face of the industrial world to bring to the front countries which have hitherto been regarded as backward and unfertile, and, possibly, to relegate to subordinate places those countries which have hitherto led the van of industrial progress and divided between them the world's trade.

The Industrial Trinity.

For, this is the true significance of the First World Power Conference to those who can take the long view. The coal age is passing, and the days of oil are miserable, for both coal and oil are terminable resources, and the more they are depleted, the more costly will they become as sources of power. Water alone is inexhaustible, in the human sense at least, and just as it was the first of natural forces to be harnessed to the service of man, so it seems likely to be the last and most enduring.

Some of the illimitable wonders of water power are already being demonstrated by the use of electrical energy on a very large scale in Italy, also in such little countries as Switzerland and Norway. Mountain torrents, river cataracts, and inaccessible lakes are being utilized to provide cheap motive force for factories, iron foundries, and transport. New industries are springing up, and old industries are taking on new life under the beneficent influences of minimized working costs and improved methods.

Canada is making immense strides in the development of the latent power in her great lakes, rivers and falls, and her future as a great industrial power is assured beyond question. All things will be possible to the country which can turn its "White Coal" into electric energy, and when the process has gone far enough, the greatest revolution of all that it will achieve will be in the cost of producing the commodities and necessities of daily life.

Natural Resources Ignored.

And what of our own future in these little islands, which have shown such a marvellous industrial record? We have no great falls to speak of, no mighty rivers or vast inland seas. Coal has been the source of our wealth, and although at the same time the generation of power by hydro-electrical methods is making great strides, we must take every care not to waste our natural advantages, also to avoid methods of consuming coal which are extravagant or out-of-date. The writer understands that a considerable portion, fifteen to twenty per cent, is lost in excavation. There are, it is stated, some 60 million tons of coal dust left in the pits every year, for which apparently, so far, no use has been found. America is leading the way in the use of coal in pulverized form, and whilst this method is not applicable for all and every purpose, yet it must be studied.

The economic use of fuel is another of the great industrial problems which the First World Power Conference will investigate, and we, as an industrial people, need to have open and receptive minds if we are to make the most of the opportunities afforded by this concentration of all the best of the technical and scientific wisdom of the world in our midst.

Dispatches dated 18th September last, from the Acting Commercial Secretary, British Embassy, Tokio, give estimates of damage done by earthquake and fire to the Japanese Cotton Industry. It appears that some 970,000 spindles out of 4,338,000 were put out of action. Of these about 239,000 were entirely destroyed, 360,000 crumbled and the remainder partly damaged.

India's Trade in 1923-24.

By Mr. T. M. Ainscough, O.B.E.,*

H. M. Senior Trade Commissioner in India.

The imports of private merchandise into India during the year showed a decrease in value of 2 per cent from Rs. 233 crores to Rs. 228 crores, while exports, including re-exports, increased by 15 per cent from Rs. 314 crores to the record figure of Rs. 362 crores. There was a visible balance of trade in favour of India to the extent of Rs. 62 crores as compared with a credit balance of Rs. 25 crores in 1922-23, and a debit balance of Rs. 32 crores in 1921–22. For the first time sterling purchases in India from exchange banks and firms and payments in India to local bodies, etc., against proceeds of sterling loans floated by them in London and taken over by the Secretary of State, have been taken into account in arriving at the balance of trade.

The total imports from the United Kingdom declined from 140 crores to 132 crores, and the British share of the total trade was reduced from 60 per cent to 58 per cent. The shares of our principal foreign competitors, however, remained practically constant. The United States supplied 5½ per cent of the total, Japan 6 per cent, and the German share was increased from 5 per cent to 5¼ per cent. A notable feature of the year was the heavy import of sugar from Java, which brought Java's share of the total trade to over 6 per cent.

On the whole, the year was a colourless one, and the activities of most importers were directed towards the final clearance of old stocks, which are now practically exhausted, the settlement of outstanding accounts against dealers, and purchases on a most limited scale. It would appear that the statistics under review record the low-water mark of India's import trade for many years to come. A slow but distinct improvement is already noticeable, and it is to be hoped that the forthcoming year will show an increase, not only in the figures of the total imports into the country, but in the proportionate share of the United Kingdom.

Textiles.

The total imports of cotton yarns fell from 926 lakhs to 793 lakhs. British imports were reduced from 569 to 461 lakhs, and Japanese from 320 to 285 lakhs.

The total trade in piece-goods (unbleached) shrank from 931 million yards, valued at 30½ crores, to 704 million yards, valued at 23 crores. A most noteworthy falling off is shown in the imports from Lancashire, which were reduced from 833 million yards, valued at 26½ crores, to 600 million yards, valued at 19 crores. The Japanese share was slightly increased from 90 million yards, valued at 3.5 crores, to 96 million yards, valued at 3.6 crores. This reduction in grey goods may be attributed almost entirely to the high prices ruling during the year. These were above the limits of Indian buyers, and caused a certain amount of substitution of the cheaper Indian mills goods and of the products of local hand looms.

There has been a satisfactory increase in the total trade in piece-goods (bleached) from 402 million yards, valued at 15 crores, to 415 million yards, valued at 15½ crores, and Lancashire has obtained her fair share of this increase, the shipments advancing from 395 to 403 million yards and values from 14.6 to 14.62 crores. Imports from Switzerland show a noteworthy increase from 991 thousand yards, valued at 9½ lakhs, to 4¾ million yards, valued at 43 lakhs. Dutch shipments rose from 18 to 22 lakhs.

A most satisfactory expansion is to be recorded in piece-goods (coloured, printed, or dyed) from 244 million yards, valued at 12½ crores, to 347 million yards, valued at 17½ crores. British shipments rose from 212 million yards, valued at 10½ crores, to 303 million yards, valued at just over 15 crores. This was principally made up of dyed and coloured woven goods, and it is noteworthy that India has not yet resumed purchases of prints to any extent. The trade of our Continental competitors increased materially. Italian shipments rose from 15½ lakhs to 45¼ lakhs, those from Switzerland from 18½ to 27½ lakhs, but imports from the Netherlands fell from 67 to 44 lakhs. It is difficult to say to what extent imports from Switzerland represented cloth woven in Lancashire, but dyed and finished in that country. Italian competition is becoming more serious, and the returns for the forthcoming year will probably show an even greater advance.

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* Part of Report furnished to the Department of Overseas Trade.

The total imports of sewing cotton remain fairly constant at 1½ million lbs., valued at 71½ lakhs. The United Kingdom supplies were valued at 66 lakhs. The trade in haberdashery and millinery is still considerably below the normal, although the total imports advanced from 93 to 99 lakhs. The British share fell from 35 to 32½ lakhs, mainly owing to the competition from Germany, the imports from that country rising from 19½ to 27 lakhs. The shares of Switzerland and Japan remain fairly constant at 16½ and 11 lakhs respectively. A most satisfactory increase is to be recorded as regards woollen piece-goods. The total imports rose from 3⅓ million yards, valued at 99 lakhs, to 7½ million yards, valued at 178 lakhs. The share of the United Kingdom rose from 1¾ million yards, valued at 67 lakhs, to almost 4 million yards, valued at 108 lakhs. The shares of all competitors were increased, notably that of Germany, from 8 to 20 lakhs.

Machinery and Millwork.

There has been a steady reduction in the imports into India of machinery and millwork each year since the boom period of 1919–20 and 1920–21.

The total imports of machinery and millwork fell from 23½ crores to 19 crores. British shipments were reduced from 20 to 16¼ crores, while those from the United States of America fell from 2¼ to 2 crores. Even shipments from Germany, in spite of the depreciated mark, shrank from 78 to 43 lakhs. The total imports under the various classifications of machinery were as follows in lakhs :—Cotton machinery, 560 ; jute machinery, 137 ; electrical machinery, 222 ; boilers, 99 ; mining machinery, 108 ; oil crushing and refining machinery, 38 ; paper-mill machinery, 6 ; refrigerating machinery, 9 ; rice and flour-mill machinery, 21; saw-mill and wood-working machinery, 10 ; sewing and knitting machines and parts thereof, 54 ; sugar machinery, 13 ; tea machinery, 39 ; metal-working machines (including and mainly consisting of machine tools), 52. American competition has been more keenly felt in electrical machinery, in which the share of the United States rose from 34 to 41 lakhs as contrasted with a reduction in the British imports from 199 to 164 lakhs. The British share of the total trade remained at approximately 85 per cent.

The total imports of railway plant and rolling stock rose from 11 to 11.72 crores. The British share advanced from 10.4 to 11 crores, and, as usual, there has been little competition. Imports from Australia and New Zealand amounted to 18 lakhs (mainly sleepers), those from Belgium to 21 lakhs, and those from the United States of America to 17½ lakhs.

Iron and Steel.

The total trade in iron bars and channels fell from 45 to 23 lakhs. The British share was reduced from 15 to 7 lakhs, the Belgian from 24 to 13 lakhs, and the German from 2½ lakhs to a negligible quantity. A slight increase is to be noted in the total trade in steel beams, pillars, girders, and bridge work from 126 to 130 lakhs. Imports from the United Kingdom remained steady at 74 lakhs, imports from Belgium rose from 42 to 49 lakhs, while those from Germany fell from 5 to 2 lakhs. The total trade in bolts and nuts diminished from 34 to 27 lakhs, the British share falling from 17½ to 15 lakhs. American shipments were reduced from 5 to 2½ lakhs, and German from 3 to 1½ lakhs. The trade with other countries remained constant at 8 lakhs.

The total imports of hoops and strips rose from 25 to 31 lakhs. The British share advanced from 17 to 34 lakhs, while the Belgian declined from 4½ to 3¾ lakhs, and the American rose from 1¾ to 2¼ lakhs. There was very little change in the total trade in nails, rivets, and washers (other than wire nails), which rose from 11 to 12 lakhs. The United Kingdom supplied 5½ lakhs, Norway 2½, Sweden 1, and Belgium 1½ lakhs. The total imports of cast pipes and fittings during the period fell from 27 to 15 lakhs, those from the United Kingdom from 21 to 14, and those from other countries from 3 to 1½ lakhs. The past two years have witnessed a most satisfactory and steady increase in the imports of galvanized sheets. During the period under reveiw the total imports rose from 122,473 tons, valued at 366 lakhs, to 165,038 tons, valued at 517 lakhs. It is most encouraging to observe that the United Kingdom has regained her exclusive position in this trade, and during last year she supplied 159,134 tons, valued at 499 lakhs. The only slight competitor is the United States, which supplied 15 lakhs. Imports of tinned plates rose slightly from 43,621 tons, valued at 169 lakhs, to 44,090 tons, valued at 179 lakhs. The United Kingdom maintained its position fairly well, and although British quantities were reduced from 38,739 tons to 37,496 tons, the values increased from 149½ to 152 lakhs. The American share increased by 2,587 tons and Rs. 11 lakhs.

Although the volume of imports of sheets and plates (not galvanized or tinned) rose from 96,622 tons to 108,142 tons, the value of the total imports fell from 187 to 181 lakhs. The United Kingdom improved its position from 83 to 112 lakhs, whereas the Belgian share fell from 55 to 39 lakhs, and the German fell from 41 to 26 lakhs. There has been a considerable contraction in the total import of wrought tubes, pipes, and fittings from 144 to 80 lakhs. Imports from the United Kingdom shrank from 69 to 59 lakhs, those from the United States of America from 52 to 10 lakhs, and those from Germany from 17 to 6 lakhs. The United Kingdom has improved her relative position in the trade. The total trade in wire nails fell from 37½ to 31 lakhs. Imports from Germany diminished from 20 to 13 lakhs, but those from Belgium increased from 12 to 13½ lakhs. Unfortunately, the United Kingdom only figures with an import of Rs. 68,000. The total trade in wire rope expanded from 26 to 29 lakhs, and the share of the United Kingdom increased from 22 to 28 lakhs. It is satisfactory to note that during the year there was virtually no competition whatever, and that the United States only supplied a negligible Rs. 60,000. The valuable trade in steel bars and channels shows a slight reduction from 295 to 246 lakhs. The Belgian share fell from 167 to 156 lakhs, the British portion from 41 to 32 lakhs, and the German from 58 to 37 lakhs. Luxemburg and France sent most of the remainder.

Hardware.

This is such a comprehensive heading that it may be of interest to examine the total imports in each item. The figures represent lakhs:—Agricultural implements, 21; builders hardware, 24; domestic hardware, other than enamelled ironware, 9; enamelled ironware, 31; gas mantles, 5; implements and tools, other than agricultural implements and machine tools, 67; metal lamps, 60; parts of lamps other than glass, 9; safes and strong boxes of metal, 4; stoves, 7; other sorts, 203. The total imports of hardware fell from 515 to 442 lakhs. This reduction is particularly noticeable in the case of the United Kingdom, whose share fell from 254 to 207 lakhs. The German proportion was not reduced to quite such an extent, and fell from 112 to 93 lakhs. The United States of America fell from 77 to 72 lakhs, Japan from 33 to 26 lakhs, while other countries increased from 30 to 32 lakhs. While British manufacturers are retaining a fair share of the higher grade trade in articles used by Europeans and in industry, German makers are rapidly regaining their position in the bazaars of India in the cheapest forms of hardware and in novelties.

Electrical Instruments and Apparatus.

The imports under this large and comprehensive heading advanced from 216 to 226 lakhs. The United Kingdom more than maintained its position, the imports totalling 172 lakhs. Imports from Italy were reduced by 5 lakhs, and those from Germany by 5 lakhs. Supplies from the United States of America remained stationary at 18 lakhs. There was reduction in the imports of wires and cables of some 7 lakhs, but the trade under the other headings was well maintained.

The total imports of motor-cars during the year rose from 4,323, valued at 138 lakhs, to 7,984, valued at 205 lakhs. This increase has been contributed to by most of the supplying countries. The number of British cars imported rose from 449, valued at 33 lakhs, to 1,005, valued at 45 lakhs. The Canadian imports advanced from 1,846, valued at 37 lakhs, to no less than 3,290, valued at 65 lakhs. American shipments rose from 1,386, valued at 44 lakhs, to 2,865, valued at 69 lakhs. Although the import duty of 30 per cent still handicaps this trade, it is somewhat difficult to demonstrate from the figures that the cheaper American and Canadian cars tend to be imported in preference to the more expensive British and European makes. The general impression, however, is that a high rate of duty depresses the sale of the higher-priced cars as compared with the cheaper American types. The number of motor-buses, vans, and lorries increased from 480, valued at 22 lakhs, to 1,044, valued at 25 lakhs. If these figures are correct they tend to show that there has been a very considerable reduction in the average price per lorry imported.

According to the Report on the Maritime Trade and Customs Administration of Burma for the year 1923–24, exports of lac to India rose from 53,227 cwts. valued at Rs. 57·81 lakhs to 65,322 cwts. valued at Rs. 56·43 lakhs. These consisted chiefly of sticklac and were shipped almost exclusively to Calcutta. The overland arrivals of sticklac from Western China and Shan States were 5,742 cwts. and 59,063 cwts. as against 3,514 cwts. and 48,681 cwts. respectively, in 1922–23.

Women's Education in Mysore.

By A. R. Banerji, Esq., C.S.I., C.I.E.,*
Dewan of Mysore.

There is in the Mysore State, as perhaps elsewhere in the whole of India, a great disparity in the level of literacy of women as compared to that of men. Taking the Census figures of 1921, the percentage of boys at school during the year 1921-22 to the total population of school-going age was 55.89, while that of girls to the total population was 12.46. The ignorance in which the women of the country are steeped at present cannot but be a handicap to the progress of the nation as a whole. To quote a distinguished educationist: "The Education of a single girl means the uplifting of the whole family in a larger sense than the education of a single man, and the education of women has a profound influence upon the whole texture of national life and the whole movement of national thought and a far greater proportion of impulse is imparted to the educational and moral tone of the people by the education of women than by the education of men." Judging from this standard, the present condition of women's education in Mysore cannot be considered to be at all satisfactory. Although beginnings in this direction were made by the London Mission in 1840, during the past 8 decades the percentage of girls at school to the total population of school-going age had only reached 9.7 in 1915-16 and at the end of 1922, 12.46, although there has been a fair and steady increase in the number of institutions and the total strength since then. At the end of 1922, the total number of girls under instruction in all kinds of schools was 53,741 out of a total of nearly 5 million women; and of the 727 girls' schools, three were English High Schools with a strength of only 106 pupils, one Kannada High School with a strength of 19, thirteen Anglo-Vernacular Schools with a strength of 22,005, ninety-four Vernacular Middle Schools with a strength of 10,651 and 566 Primary Schools with a strength of 22,451.

Higher Education in the State started in the year of the Rendition when the Maharani's Girls' School was first established. This Institution remained under private management till 1891 when it was taken over by Government and soon developed into a Second Grade College affiliated to the Madras University. In the year 1917–18, it was raised to the status of a constituent First Grade College of the Mysore University. In addition to this College, there are at present three High Schools for women in the State, of which this Institution is a Collegiate High School. Since 1916-17 the number of students under instruction in the Maharani's College was 87 besides those who received instruction in the Central and Maharaja's Colleges. The total number of graduates including M.A.'s passed out in the Mysore State is only 19.

From the above statistics, it is clear that although considerable advance has been made, there yet remains much to be done. It is with that view that recently, the Government of His Highness has sanctioned one Damodardas Scholarship to be awarded to a lady to be deputed abroad for the study of the Educational organization so far as the education of women is concerned. This is no doubt a big step but it has to be remembered that the educational systems in advanced countries of the West stand on a different plane altogether and we have to study local conditions as well as difficulties before it is possible for us to lay down any constructive programme.

Some Outstanding Questions.

In the Educational Memorandum, one of the most important official papers published in recent years by Government, some of the questions relating to Women's Education were dealt with, the most important ones being the medium of instruction in Girls' Schools and question of curricula. I see that the Head Mistress has referred to the latter in her Report but I am not sure that she raises in her reference to this question a rather fruitless controversy between Education and Examination which applies to all forms of Education and not merely to Women's Education. It is an accepted truth that the curriculum for each grade of education should be adapted to the needs and ends in view but to lay down dogmatically, that the curricula fixed for all grades of Women's Education should be elastic or that it should be totally different from the curricula fixed for the education of boys is, I think, too wide a proposition. The chief factor that should determine the form in which education of girls in this country

* Speech made on the occasion of the Prize Distribution at the Vani Vilas Institute, Bangalore City, on the 18th September 1924.

in the lower grades should be imparted, appears to me to be the social differences and the communities to which the girls belong and the rate of social progress that they have attained. For instance, the education of Mohammedan Girls in Hindi Girls' Schools and the education of caste Hindu girls in all the other Girls' Schools of the State cannot be arranged or imparted through any stereotyped system but has to be adopted according to the circumstances and needs of each case. The problem, therefore, of Women's Education in India is complicated chiefly owing to difference in social customs and habits amongst our people. Until the population as a whole becomes homogeneous in regard to these matters, it is almost an impossibility that one standard or ideal can be put forward as fit to be pursued in the case of all.

Turning to the different grades of Education, Higher University Education and High School Education naturally so far as the women in this country are concerned, benefit a very small number. To make such education efficient in every sense of the term, it is necessary to afford facilities to instruct a large number of pupils in these grades in well-equipped and modern colleges where there will be necessary emulation and rivalry as well as a proper *esprit de corps* and healthy development of modern culture in all directions. Taking the statistics of the Maharani's College in Mysore, one cannot but feel disappointed that the number of graduates turned out since it was first established is so small. The trouble really is that the majority of Indian women that go in for Higher University and Vocational education, do it mainly with the objects of earning a livelihood and not for the object of general culture and enlightenment. Till therefore there is a spread in the desire for general culture amongst women beyond the grade of elementary or middle school education for girls, it is idle to expect any continuity in the growth of Women's Education in this country from stage to stage and each grade more or less will have to be looked after to provide for its own special needs.

Definite Aim a Desideratum.

It must be disappointing to those who are enthusiastic about the progress of Women's Education in India, to read from the latest Quinquennial Report of the Government of India on the subject that Women's Education is carried on in response to a demand that does not exist. Such an allegation, if true, casts to my mind, a slur on the whole of India which now is clamouring for an extensive Constitutional advance in which women are likely to play an important part in the near future in the political life of the country. Much of the apathy and indifference in regard to these momentous questions may be laid at the door of the educated men themselves. There are no doubt a few enthusiasts here and there, but the genuine, honest, conscientious regard for the spread of education amongst women has yet to develop in the minds of the bulk of educated men in this country. I have seen, during my inspection tours in the State, that the majority of the girls that are sent to our Girls' Schools in the Districts have no definite aims or ambitions in regard to Education and more than 90 per cent of them leave before they even reach the highest standard of the primary grade. Is this not a great pity, I ask. Whatever may be the difference in customs relating to marriages, etc., amongst various communities, it is necessary to ensure that there is some continuity of instruction which may be provided by the Home Instruction classes or other agencies so long as the present prejudices continue amongst the less advanced Indian communities.

Education and Franchise.

There is at present a great cry for the extension of the franchise to women in this country. We have here in Mysore, in introducing our Constitutional Reforms, removed the sex bar and it is in contemplation to remove it in respect of all elections including those of Municipalities and District Boards. Well now, honestly speaking, the cry for the removal of the sex bar appears to me to indicate a desire to start from the wrong end unless a corresponding effort is made for raising the standard of education amongst women in the country as a whole. This, our Government are trying to do as best as they can, but more expenditure is necessary and also a corresponding response from all the communities amongst the total population of the State. Taking the political problem for consideration for a moment, I think it is absolutely necessary to start an organization throughout the whole length and breadth of India for the training of women in the field of political and social sciences, social ethics, civic and child welfare, poor relief and other allied matters so that the most capable amongst them may become leaders amongst their own sex in the field of social and civic and also political work.

Such an organization on an extensive scale is one of the most urgent needs of the country and any form of education above the middle school that the Government may promote, should have, as one of its objects, the development of this important side of women's education irrespective of anything that voluntary effort may do. While therefore I do not definitely propose for any hard and rigid differentiation in the curriculum of education for boys and girls respectively, I am of opinion that we have to look considerably ahead at the present moment and prepare the ground for sowing the seed which in course of time will bring us a harvest of a large number of women workers to constitute themselves as leaders of public opinion and organizers in the field of social service and politics amongst their own sex. Without their aid and their moral support and co-operation, I feel that the progress of India as a nation will be slow and considerably retarded.

The Vani Vilas Institute.

Turning now to the Vani Vilas Institute, it is gratifying to note that while it started from very small beginnings, it has now developed into a fully equipped High School for girls with a vocational side attached to it. There is no doubt that more scope for the development of the latter should be given especially in the case of those pupils who, by force of circumstances, cannot continue their studies beyond the Matriculation grade. It is also gratifying that the staff, under the guidance of the energetic Head Mistress, has not overlooked the necessity for physical culture and sufficient attention is being paid to sports and games. I congratulate the Head Mistress and her staff on the excellent results that she has obtained in the Public Examinations especially in the S.S.L.C. where the percentage of passes was 64 against 46 for the whole State. I should not omit to mention that the present efficient condition of this Institution is largely due to the cortinuous efforts of the late Head Mistress, Mrs. Srirangamma, who laboured hard for its development from stage to stage for a period of six yeais. It will be noted that the education in this Institute is absolutely free no fees being levied, and it costs Government a sum of Rs. 27,400. Miss Lazarus naturally has brought forward sone of the urgent wants of the school in equipment, Library, Building extensions, etc. She has also made a reference to the suggestion that History and Economics should be provided for in the teaching arrangements of the Institute. These are matters which it is not possible for me to deal with just now but I have no hesitation in giving the assurance that when suitable proposals are formulated by the Inspector-General of Education, they will receive the sympathetic consideration of Government.

"Beam" System Wireless.

A White Paper has been issued giving the text of the agreement between the Marconi Wireless Telegraph Company, Limited, and the Postmaster-General for the construction of a wireless telegraph station on the "beam" system capable of communicating with Canada and of being extended to South Africa, India, and Australia.

A minute from the Treasury which prefaces the agreement states :—

"The company are to complete the station for communication with Canada within 26 weeks from the date on which the sites for the sending and receiving stations are placed at their disposal, and they undertake to have a similar station available in Canada for communication with this country within the same period....

"The station is to be capable of communication at a speed 100 five-letter words per minute each way (exclusive of any repetitions necessary to ensure accuracy) during a daily average of 18 hours. Upon its completion the company are to give a demonstration by actual working for seven consecutive days that it fulfils this condition, and if the Engineer-in-Chief of the Post Office is satisfied with the test, one-half of the cost of the station is to be paid to the company. The station is then to be handed over to the Postmaster-General."

The guarantees in respect of the station for communication with Canada are to apply to additional units, with the exception that the average daily hours of communication are to be as follows :—

Between England and South Africa, 11 hrs.
Between England and India, 12 hrs.
Between England and Australia, 7 hrs.

The rates to and from Canada are not to exceed the existing rates, and those to and from other parts of the Empire are not to exceed two-thirds of the cable rates now in force.

Education in India, 1922–1923.

A review of Education in India in 1922—23, summarizing briefly the developments recorded in the various provincial reports, is issued by Mr. J. A. Richey, Educational Commissioner with the Government of India. A comparison has been made showing in comparative form the progress made in the various Provinces. Interesting facts are recorded, among others, about the working of system of the compulsory education and the education of the depressed classes. During the year 1922—23, there was a marked recovery from the effects of the Non-Co-operation movement on the attendance at schools and colleges in British India. Professional colleges alone of recognized institutions show a decrease in attendance. This is not due to any decline in the number of students seeking professional training. Indeed, great competition for admission into the Medical and Engineering Colleges is reported from Bombay and also from other provinces. It is due chiefly to the reduction in the number of students in the training colleges for teachers. The decrease in the number of professional colleges is partly due to the re-classification of these. There has been a fall in the number of unrecognized institutions. The figures under this head are always reliable and indicate the return of many of the schools to the ordinary public school system.

Retrenchment Proposals.

The increase in attendance would have been more significant but for the stringency from which public finances were suffering. Central and Provincial budgets were framed with a view to economy. Schemes involving new expenditure were postponed. Several Governments, including the Government of India, went even further, and set up Committees to investigate the possibility of reducing their normal expenditure. These Committees did not, as a rule, suggest any drastic reductions in educational expenditure, and where they did so, their recommendations were not accepted. They did, however, sometimes make unexpected proposals. The Central Provinces Retrenchment Committee, for example, recommended that all inspection should be entrusted to Provincial Service officers, and inspection of Primary Schools to Local Bodies. The Bengal Retrenchment Committee suggested that all Government Secondary Schools should be handed over to Local Bodies. This recommendation is directly contrary to the accepted Indian educational policy, which aims at discouraging Local Bodies undertaking responsibility for any but vernacular education. The same Committee would have abolished all institutions for the training of teachers, basing their recommendation on the pessimistic ground that the material at present entering the teaching profession was not worth training. No Provincial Committee, however, went so far as that appointed by the Government of India. This body suggested very heavy reductions in expenditure on education in areas such as Delhi, Coorg, and the North-West Frontier Province, directly controlled by the Government of India. These suggestions were accepted with considerable modifications. They further recommended the closing of the Delhi University, which had only recently been brought into being by an Act of Legislature of 1921. This proposal was not accepted. A further recommendation of the Committee which was accepted resulted in the amalgamation of the Department of Education and Health in the Government of India with that of Revenue and Agriculture. The combined Department is now known as the Department of Education, Health and Lands. The Committee also succeeded in bringing to an end the Bureau of Education and the Central Advisory Board of Education, the last meeting of which was held in February, 1923. The latter institution had only been created in 1921, and formed a link between the educational activities of the different Provinces.

Increase in Expenditure.

In spite of all efforts at economy, the bill for Education in India has inevitably increased. Altogether, expenditure on education rose by 66 lakhs, from Rs. 183,791,398 to Rs. 190,404,030 but of new expenditure, no less than 30 lakhs was incurred in the Punjab. The Punjab is also responsible for one hundred and fifty thousand of four hundred thousand new pupils in Schools. This phenomenal increase in enrolment is due to the adherence of the Punjab Government to a consistent policy of educational expansion in rural areas. It is also partly due to the development of adult education in villages through the medium of co-operative credit societies. It is satisfactory to find that an increase in attendance is reported from all Provinces save Burma, where a further decrease in numbers is a

result of a deliberate policy of concentration, with a view to efficacy, and Coorg, which little Province, however, still has the highest percentage of school attendance in India. Even Bengal, which has reported a steady annual decline during the past five years, shows at last, an enhanced attendance of 58,000 students, with the result that enrolment in 1922—23 is slightly in excess of that in 1916—17.

The Report next refers to changes in administration and control of University Education, brought about by amending Acts of the Legislatures in various Provinces. There was nothing remarkable in the figures for Secondary Education. The Boy Scout Movement continues to flourish. The Boy Scouts Training Camps at Lonavla was a great success and raised the number of trained Scout Masters during the year from 177 to 413, but it was closed in March, 1923, to enable Mr. Miller, who was in charge of it, to tour in the Bombay Presidency and supervise the work of trained men.

Primary Education.

The record of primary education shows that there was an increase of two thousand in the number of primary schools for boys, and of 275,000 in the number of pupils attending them. Burma, Bengal, and the Central Provinces alone show a decrease both in schools and scholars. In Burma, as already stated, the decrease is due to the elimination of inefficient schools. The policy of relying chiefly on monastic schools is now being seriously questioned. While these schools have been responsible for a high standard of literacy in the Province, yet the instruction in most of them is of the poorest possible description. The Pongyi is not a teacher by profession, and is often indifferent or hostile to secular education. It even appears that the Burman is losing faith in the old system of monastic education in Bengal. The fall is reported to be only nominal, since many schools for adults had hitherto been classed under the head of "Primary Schools". In the Central Provinces, the decline in enrolment is partly due to the attitude of Local Bodies, who, in their anxiety to assert their independence of departmental control, have neglected or dispensed with the assistance which Government officials have given in the past in enlisting support for village schools. Bombay reports a decrease in the number of schools, but an increase in the number of pupils.

Compulsory Education.

The greatest interest naturally attaches to the experiment in the introduction of compulsory education all over India. 30 Municipalities, one District Board, and 86 school areas (in the Punjab) have already adopted compulsion. It must not be assumed that in any of the municipalities compulsory education is in existence in the complete form in which, for example, it is found in Great Britain or in Germany. Schemes adopted by Municipalities usually aim at the gradual provision of new schools and new teachers and demand three or four years for fulfilment. As yet, no thoroughly organized system of registration and visitation by attendance officers has been developed. These will come in time. Meanwhile one of the most interesting events in the past twelve months has been the inauguration in the Punjab of a system of compulsory education in rural schools areas.

Progress in Madras.

The Punjab and Madras, particularly the former, report considerable progress and expansion on a voluntary basis. In the latter Province, a system of monthly allowances in lieu of capitation grants was brought into effect at the close of the year. Scales of pay of teachers in Government elementary schools were revised and the new scales were suggested for adoption by Local Bodies also. In Bihar and Orissa, although no further extension of compulsory education is reported, the number of pupils attending primary schools is the highest ever recorded for the Province.

Education of Women.

As for the education of women, the total number of recognized institutions for girls rose from 23,780 to 24,068, and their enrolment increased by over 27,000, from 8,79,013 to 9,06,289, but only a very small proportion of these pupils have proceeded beyond the lower primary stage.

Tables for European education show a decrease of thirty-two in the number of schools, but an increase of 787 in the number of scholars. An interesting innovation was the holding of an Exhibition at Calcutta in February of the work of European Schools in Bengal. The educational value of the Exhibition was great, and it is proposed to make it an annual event.

Education of Muslims.

The figures show a satisfactory increase in the attendance of Muhammadans at school, though the number of Muhammadan boys to reach the highest stage of education is still small, in comparison with the figures for

other communities, due generally to the conservatism of Muhammadans and the distrust of secular education. The education of the Moplah is engaging the Madras Government's attention.

Submerged Classes.

Finally, on the question of education of the submerged classes, the Report observes: 'That there is an awakening among the backward classes to their need for education is evident from many reports. In Bengal alone, the number of pupils belonging to the submerged classes rose from 96,522 to 1,23,144, a notable increase for a single year. An example to such an awakening is furnished by the Meos of Nub, who petitioned the Governor of the Punjab that a special cess might be levied on their community for the purpose of maintaining a secondary school. This being impossible, the community raised a voluntary levy equal to 10 per cent of the land revenue. Very few villages have failed to pay, and there has been no complaint from the subscribers. With the help of the District Board, a Meo High School has now been fairly launched, and the dream of every Meo leader for generations has been realized, but all communities are not thus able to help themselves, and the Punjab Government addressed the Local Bodies, suggesting various measures for attracting members of the backward or submerged classes to schools, such as the provision of free school books and materials. The Central Provinces Government, following the recommendations of a Special Committee which considered the subject, have gone even further, and in addition to the allotment of special scholarships, are now granting to teachers of Elementary Schools a bonus of Rs. 3 for every child of a submerged class successfully prepared for the primary certificate examination. It appears to be as yet doubtful whether the orders issued by several Governments, *e.g.*, Madras, Bombay, and the Central Provinces, that boys belonging to the submerged classes should be freely admitted into public schools, can be carried out with great success. In one school where this was attempted, in Bombay, the numbers fell from 280 to 41. On the other hand, the attendance of Adi-Dravida children in common schools has increased, and District Educational Councils in Madras have adopted the enlightened policy of giving enhanced grants to aided schools which admit such pupils.

Motor Vehicles and Highway Income.

An analysis of the various sources of highway funds since 1914 made by the Bureau of Public Roads of the United States Department of Agriculture shows that there is a marked tendency to collect a larger proportion of highway funds from the owners and users of motor vehicles. In 1914, out of a total highway income of $240,262,784, the collections from motor vehicles amounted to $12,382,031, or 5.1 per cent of the total. In 1921, seven years later, the motor vehicle owners and operators paid $118,924,706 in motor vehicle fees and $3,685,460 in gasoline taxes, which together equalled 10.6 per cent of the total income for highway purposes. A similar compilation of payments made by owners and operators of motor vehicles for licenses and permits in 1923 shows a total contribution on their part of $188,970,992. In the same year gasoline taxes levied by 35 States amounted to $36,813,939. The motor vehicles, accordingly, contributed a total of $225,784,931, or 19.5 per cent of the entire 1923 highway income. In the six New England States this contribution is 25.1 per cent. This increase is accounted for by the increase in the total number of vehicles registered and in the change in the average payment per vehicle, which has risen from $11.70 in 1921 to $15 per vehicle in 1923.

A very substantial part of the total highway income, 38.1 per cent, was derived from the sale of bonds, both State and local. General property taxes contributed less than half the highway income, or 44.4 per cent. This means, worked out in another way, that of every dollar collected by the States, counties, cities, townships, and other taxing districts, only 12.4 cents was used for highway purposes. The average annual expenditure per person per mile of road all over the United States is only 0.0054 cent—1 cent for each 200 miles of road. This ranges from 0.0015 cent in the west North Central States to 0.0101 cent per person per mile in the Pacific States.

Recently metal money was put into circulation in Austria, the coins employed being for values of 10,000, 1,000, 200 and 100 kronen, respectively.

Co-operation in Mysore.

By A. R. Banerji, Esq., C.S.I., C.I.E.,*

Dewan of Mysore.

I thank you most sincerely for your cordial welcome to this the 11th Annual Session of the Co-operative Conference which has now become one of our annual fixtures during the Dasara season in Mysore. Such conferences are useful in more ways than one ; they bring together the prominent co-operators of the State and the movement is kept abreast of the times, being brought in contact with up-to-date ideals of co-operative work in all its spheres of activity which the valuable annual addresses delivered year to year present to the Conference. The movement has been working in the State since 1905, and after nearly 20 years of co-operative effort, we are all met here to-day again to consider measures which are necessary for the consolidation and expansion of co-operation as well as to discuss the special problems which call for solution in the light of past experience. During the last year, the Co-operative Department in Mysore has been engaged mainly in the work of winding up moribund societies, which have been really a drag on the movement, and although the total membership of the societies fell from 95,000 to 93,000, it is encouraging to note that the working capital and volume of transactions rose considerably. In addition to the normal work of developing agricultural and sericultural co-operation and industrial credit, the co-operative societies in the areas affected by the recent floods in the Malnad and by drought in the Maidan were actively helpful in the administration of special grants for loans given by Government for house-building and relief of distress. You are no doubt aware that His Highness' Government have sanctioned recently a sum of a lakh of rupees for financing house-building co-operative societies in Shimoga and Nanjangud at a low rate of interest and that a special grant of over Rs. 10,000 has been placed at the disposal of the Registrar for the grant of loans through co-operative societies to weavers and other artizans. I wish to avail myself of this opportunity on behalf of Government to thank all societies which came so readily to the help of Government at such a critical time both by voluntary contribution and by a wise administration of the funds placed at their disposal.

The achievements of the co-operative movement in India for the last 20 years, although not so great as an enthusiast might wish, are still of a solid and substantial character to justify our hopes that the movement has already taken deep root in the soil and will develop for the general good of the masses. In the statistics published recently by the Government of India showing the progress of the movement, interesting figures are given under the main heads in the different Provinces of the British Indian Empire. Judging on the basis of population, the co-operators of Mysore have a record which can compare very favourably with many of the British Indian Provinces. For a population of nearly six millions, we have 17 banks, over 1,500 societies with a membership of nearly 93,000 and a working capital of Rs. 84 lakhs. The total volume of transactions amounted to more than Rs. 2½ crores and the reserve fund was about Rs. 12 lakhs. These results are no doubt encouraging but there is more work ahead which calls for continuous and earnest effort. Assuming that the population of Mysore is divisible into 12 lakhs of families and that only one member of each family can become a co-operator, we should have a total membership of nearly one million, if the movement is sufficiently widespread. The present membership is only 93,000 and has certainly not touched even a tenth of our population. The question of extending the scope and influence of the movement is now engaging the earnest consideration of His Highness' Government, specially with reference to the recommendations of the Samaldass Committee on which orders will, I hope, very shortly be issued. It may perhaps be premature for me to anticipate what His Highness' Government may resolve in regard to these matters but I may assure you on behalf of myself and of my colleagues that a sympathetic and comprehensive view will be taken by the Government in regard to the various problems and future policy. I hope it may be possible for Government to grant substantial concessions for the formation of an Apex Bank which is so essential for the success of the co-operative movement. There is, I consider, a great field of co-operative activity in house-building in the Mysore State, and I am glad this important subject is receiving the attention it deserves and that you fully

* Speech delivered at the Opening of the Mysore Co-operative Conference on 5th September 1924.

appreciate the sympathetic assistance Government have recently given in this direction. I shall not delay your proceedings by a discussion of any of these problems, as you are no doubt anxious to hear Rao Bahadur Rajakarya-prasakta M. Shama Rao, who was our first Registrar of Co-operative Societies in Mysore and whom you have so fittingly chosen to guide your deliberations and deliver the annual address. But I would like to avail myself of this opportunity to impress on you that a large portion of the work of gaining popular confidence and public support for the cause of co-operation in Mysore lies in the hands of the non-officials. Hitherto, the movement has been fostered largely through official initiative and guidance very ably assisted, no doubt, by a number of enthusiastic and honorary workers and non-official co-operators. In the future years, we shall have need of such workers in ever-increasing numbers and I have every confidence that my appeal will not go in vain when I call upon all public-spirited citizens of Mysore—whether working in the field of Politics, Education, Social Reform or Economic development—to co-operate in the promotion of a strong non-official agency for the development and control of the co-operative movement in the Mysore State.

I have now great pleasure, gentlemen, in declaring this Conference open, and wish you all success in your deliberations.

South Africa's New Premier.

Mr. L. E. Neame, late Editor of the *Rand Daily Mail*, writing in the London *Daily Mail*, says :—

"General Hertzog, who has now replaced General Smuts as the Prime Minister of South Africa, knows more about political abuse than most men.

For twelve years he has been the target for the heaviest shafts of the English newspapers in the Union, with none to say a word in his favour. And yet General Hertzog is the mildest man who ever provoked diatribes about secession and rebellion and racialism and civil war.

I have talked with him in his quaint family home in one of the oldest streets in Bloemfontein, and in his modest chambers in the centre of that clean and attractive town.

A lean, quite man, with tanned face and small, iron-grey moustache, the famous creator and leader of the National Party in South Africa is one of the kindliest and most courteous statesmen one could wish to meet. As one listens to him one recalls with a feeling of amazement the terrific indictment launched against him by the English Press.

For there is no trace of racialism in his conversation, no tinge of bitterness towards the English people whose newspapers have held him up to contempt as a sort of political lunatic and administrative incompetent rolled into one.

Of course, he is South African through and through. Perhaps he sees too much of South Africa and too little of the rest of the world. Possibly he is somewhat fanatical on the subject of "South Africa First".

It has been a long trek across the political wilderness since General Hertzog was ejected from the Botha Government and left the South African party twelve years ago—the bitter epistolary war with Botha, the demand for the restoration of the old Republics, the deputation to England, the unceasing speeches, the almost worshipping commandoes on the veld, the hatred of the towns (they burnt his motor-car outside Johannesburg's chief hotel), the long succession of defeats at the polls, the times when success seemed for ever impossible.

And now—now at long last, James Barry Hertzog is elected as Prime Minister of South Africa in place of the ever-conquering Smuts.

General Hertzog has emerged from it all mellowed. South Africa is still all in all to him. But his vision has broadened, and he sees, I think, a larger South Africa than he once saw.

May be he is still in the air somewhat, for he was always a dreamer. But he is a likeable man ; a just man according to his lights.

In him there is a deep and abiding love of South Africa. He would rather give his life than willingly harm South Africa. If he errs it will be only because dreams cannot always come true in a hard world."

"Nationalists," he says, "do not look upon secession as a matter of practical politics, and are unlikely to do so until the rest of the people, especially the mass of British feeling, are in favour of it."

Mysore at Wembley.

London.—The Mysore Court at Wembley is typical of Mysore products and industries. The official *Handbook* of the Great Exhibition allots some ten pages or so to it and it ought to gratify the people of Mysore to know that the Mysore Court has been well patronized. This Court stands on the northern side of the Indian building, opposite to Travancore, and is placed between the Geological Survey of India on the one side and the Industrial Courts of Cotton, Timber, Tea, etc., on the other. The *Handbook* will give you some idea of the Indian Building so far as illustrations can be expected to do justice to its magnificence. It is much to be regretted that the *Handbook* does not illustrate anything about Mysore but it gives in the notes that it has issued a good idea of the Court itself. The official language of the *Handbook* may not convey an adequate impression of its excellence but still it is worthy of perusal. In what follows I give but a running summary of what is contained in it omitting unnecessary details.

The Exhibits.

The principal articles in which there is much foreign trade from the State are minerals, such as gold, chrome and manganese, oil-seeds, hides and skins, sandalwood and other essential oils, silk, cotton, timber and other forest products. Arrangements have been made to provide a fully representative collection of these articles. In one shelf are arranged all the mineral ores in Mysore, namely, gold, quartz, iron ore, manganese, chrome, magnesite, asbestos, kaolin, and the great variety of building stones, such as granites and marbles. Mysore is rich both in the higher and lower grades of manganese and chrome ore, and the increasing demand for the lower grade ores has now given Mysore a prominent place amongst the world's suppliers. The exhibits from the Kolar Gold Fields Mining Board consist of a graphical representation of gold production in the State. The Workington Iron Co. have sent complete samples of their manganese ores, and also some of the important products containing Mysore manganese. Mysore is the only State of which a detailed geological survey has been made, and a map of its mineral resources published. These maps are also exhibited.

A complete collection of the products of the Mysore Distillation and Iron Works, consisting of specimens of wood used, the charcoal produced, the pyroligneous liquors, the grey acetate of lime, wood alcohol, tar, floatation oils and other distillates, have been displayed. The superiority of the Mysore charcoal pig iron, which nearly approaches in quality the Swedish iron, is evident even to a casual glance of the bar shown, and some articles made from it have been displayed. The markets for the by-products, such as acetate of lime and wood alcohol, are at present largely foreign.

Timber is another commodity produced in the State for which there are great potentialities of foreign trade. The Mysore timbers contain 143 different varieties, and these are displayed in decorative panels mounted by gables so as to set forth not only the characteristics of the wood, but to add to the decorative effect of the Mysore Court as a whole. A large number of sample boxes has been prepared containing some of these woods for distribution to *bona fide* enquirers, and full information regarding these resources has been collected.

Even more important than the supplies of unwrought timber are the potentialities of sending carved furniture and other manufactured articles to foreign countries. Mysore is very fortunate in having several species of timber, such as rosewood, teak, sandalwood, white and red cedar, haley, ebony and many others, which lend themselves easily either to a high polish or for being turned and carved. In order to show the possibilities of elaborate carving on rosewood a number of articles have been prepared, but of these the most conspicuous are a huge sideboard and cabinet illustrated with figures from ancient carvings, and a screen containing views of the Public Office Buildings, the Seshadri Memorial Hall, and the Palace at Bangalore. There are magnificent specimens of ebony and rosewood inlaid with ivory or mother-of-pearl. Among ivory inlaid articles are several trays, octagonal tables containing exquisite floral and other designs, but the most attractive exhibit is a small cabinet with ivory inlaid figures after the classic Oriental style, prepared by Mr. Imdad Hussain, of Mysore. So also is a table screen exhibited by him. Rosewood with shell inlaid work, consisting of trays with passages from Persian poets, is a new method of inlaying introduced in the State during the past five years.

The great improvement in lacquerware work can be seen from the specimens of toys,

snakes, fruits such as cocoanuts, grapes, pomegranates, which are very true to nature. Owing to the introduction of power-driven lathes there is now a large scope for the development of the trade in toys, and the Department of Industries is now engaged in the problem of suggesting improved designs and methods of work.

Sandalwood carving shows the greatest variety. There is a model of the Halebid Temple, in which an attempt has been made to reproduce the elaborate carving on its facades. A new departure has been made in the manufacture of caskets and other articles by the introduction of new designs taken from panels in old temples and well-known scenes of Mysore. Many useful articles, such as jewel boxes, smoker's sets, etc., have been displayed.

There is a fine display of silver articles exhibited by Messrs. Krishniah Chetty & Sons, consisting of tea sets, vases, caskets, etc. An elaborately-carved silver casket containing scenes from the life of Sri Krishna has now been specially prepared for the Exhibition. Elaborate brass carving used to be carried on in Nagamangala in the past, but the industry is now nearly extinct. Brass trays carved with scenes from the Ramayana and the Mahabharata, and a good collection of elaborately-carved images, are exhibited.

There is a considerable amount of trade between Mysore and Europe in hides and skins. A complete collection of half-tanned and chrome tanned hides is exhibited, so also, the tanning materials used, such as myrabolams, tangadi bark, etc.

Among agricultural products only such varieties as are likely to lead to development of foreign trade are exhibited. Oil-seeds, coffee, the Mysore copra (which is exclusively used for edible purposes as such), tamarind, tobacco and fibres, are all exhibited.

The article that is likely to be of the greatest importance from the point of view of foreign trade in the future is silk. Though the Mysore State produces more than Rs. 1,50,00,000 worth of silk, very little is now exported, being all consumed locally, as the methods of reeling do not suit the silk to the requirements of European weavers. The Sericultural Department has prepared special cabinets to show the improvements made in the breed of silkworms in Mysore, the difference in quality between cottage-reeled and machine-reeled silk, and the manner in which the two adapt themselves to the various processes. An up-to-date filature was started two years ago in the State. Private enterprize has come forward to take up the industry on a large scale. Filature silk finds a ready sale in the European markets, and a very large and important industry is being built up.

Some specimens of gold thread and lametta using the silk are exhibited, which is a new industry in the State.

A large variety of jacquard silks, sadies, etc., have been exhibited, as also very fine specimens of nakki work.

The Bangalore Woollen, Cotton and Silk Mills, Ltd., have sent a complete collection of their cotton and other goods.

The carpets manufactured in the Mysore Jail are renowned throughout the world, and the two magnificent specimens now displayed have been most exquisitely designed and woven.

The annual exports of sandalwood oil from the State are valued at £130,000 to £170,000 and special attention has been paid to provide a striking exhibit of the article, as it forms an important Government monopoly. The Essenflour Products, Ltd., have exhibited a complete collection of essential oils, for which there is a large foreign market. There is a good collection of scents made in the Government Soap Factory and some private manufacturers.

The Mysore Fruit Canning Syndicate have exhibited their preserved fruits, jams, and chutnies.

The exhibits have all been collected and arranged by the Director of Industries and Commerce in Mysore, Bangalore. Visitors to the Exhibition may collect additional information from Mr. S. G. Sastry, B.A., M.Sc. (Lond.), the State officer-in-charge of the Mysore Court. The Director of Industries and Commerce in Mysore, Bangalore, India, will be glad to receive any enquiries from the visitors concerning the articles exhibited.

Mr. Baker asked a question on the report presented in March 1921 by the Technical and Industrial Education Committee of the Bombay Government after a year's work, pointing out that although the scheme proposed had a most favourable press, no action had been taken upon it. Mr. Richards replied that as Education is a transferred subject, it was entirely within the province of the Government of Bombay by whom the Committee was appointed, to decide what action, if any, should be taken upon the proposals of the Committee.

Indian Income-Tax.

By Mr. A. S. Venkataraman, B.A.

As Professor Taussig remarks, all taxes, in a sense, are paid out of income but only a small part of the public revenues is secured by direct levy on income. The taxation in some countries does not include income-tax but even those countries having fully developed income-taxes, secure only a moderate fraction of their revenues from this source. Income-taxes are confined virtually to the comparatively prosperous members of society and the reason is not far to seek. The trouble and cost of direct levy make it impossible to reach small incomes and in consequence a minimum, above ordinary working-class income, is always exempt from income-tax, the minimum being reached by different countries in their own way according to the standard of living and the exigencies of taxation. The minimum in India is Rs. 2,000, according to the Act of 1918, £160 in England and £600 in the United States of America. The demand for the exemption of the lowest tier of incomes results from the same state of mind as the advocacy of progressive taxation, *viz.*, dissatisfaction with existing inequalities and a desire to lessen them. Taxes levied in small sums are irritating to the tax-payer and at the same time, expensive to collect and the legislator getting rid of them not only cares for administration economy but also wins a spell of popularity. The same principle underlies the abatement on incomes up to £700 in England and the super-tax in England & India. A brief introductory survey—the only thing possible in the short compass of an article—of the history of the income-tax in India and England reveals many interesting points. It is only a product of the latter half of the 19th century in India and mainly after the Industrial Revolution in England. In both countries it has had its origin as an emergency measure and latterly has become a normal measure. It has been an effective instrument in the hands of financiers confronted with deficit or called upon to meet emergency calls. In India it was introduced to meet the deficit (1860) due to the Mutiny. Owing to inherent difficulties and the poor yield, it was dropped in 1865. In 1869, however, it was reimposed to be dropped again in 1873. The present tax has entered upon its third lease of life, in 1886, being levied in preference to import duties and salt taxes. The opposition to it from the powerful classes is described by two statesmen. Stachey remarks. "There is no country where a tax upon incomes is more just than in India but there has been difficulty in imposing and maintaining it because it has been opposed by the richest and the most powerful classes, who alone can make their voices heard. It has long been a reproach to our administration that they have borne no fair proportion of the public burden." The same opinion is rather luridly endorsed by Colvin (Sir A. Colvin) in January 1886. "The financial history of the last 25 years is strewn with the skeletons of discussions on direct taxation and more than one of my predecessors is gibetted on that dismal golgotha for the part he took in connection with it.....The classes in this country who derive the greatest security and benefit from the British Government are those who contribute the least towards it.... I know that what I have said as to the immunity of the middle and upper classes from their due share of the public burdens is as a twice-told tale in vexing the dull ears of a drowsy man; but it is nevertheless a grievous blot on our Indian administration which urgently calls for removal and which, I believe, with patience, prudence and exercise of a little fortitude, must and will be removed." In 1903 in the Curzonian Regime, the minimum was raised from Rs. 500 to Rs. 1,000 the rate being 4 pies per rupee till Rs. 2,000 and 5 pies on Rs. 2,000 and upwards. A proposal to raise the minimum to Rs. 1,500 was vehemently attacked by Gokhale in 1912 when he enunciated the principle in the following words :— "The State has to look at the whole scheme of taxation first, from the standpoint of its own necessities and secondly, from the comparative ability of the different classes to pay their particular share of the total revenue raised from the community. Now, judged by this standard, I really do not think that the class for which my Hon'ble friend (Mr. Dadhaboy) seeks a remission, has any substantial grievance." In 1916 a fully graduated income-tax schedule was introduced. No change in the rates up to Rs. 5,000 was made. The graduation extended upwards from Rs. 5,000 as follows :—

From Rs. 5,000 to Rs. 9,999 .. 6 pies per rupee.
From Rs. 10,000 to Rs. 24,999 .. 9 pies per rupee.
From Rs. 25,000 and upwards .. 1 anna per rupee.

The principle of progressive taxation was applied. The year 1917 witnessed the levy of a super-tax in respect of incomes exceeding Rs. 50,000 in an ascending scale. Being introduced as emergency measure it has come to stay and it is but appropriate that it should continue in accordance with the principle that those who are able to pay, must pay according to their means. The rates are shown below :—

For every rupee of the first Rs. 50,000 of the excess, *i.e.*, between Rs. 50,000 and one lakh, 1 anna per rupee.

For every rupee of the next Rs. 50,000 of the excess, *i.e.*, between one lakh and 1½ lakhs, annas 1½ per rupee.

For every rupee of the next Rs. 50,000 of the excess, 2 annas per rupee.

For every rupee of the next Rs. 50,000 of the excess, 2½ annas per rupee.

For every rupee of the remainder of the excess, *i.e.*, on everything above 2½ lakhs, 3 annas per rupee.

This super-tax was more fully graduated by the Act of 1922 and incomes from tea plantations were declared liable to assessment. The rates are shown in a separate appendix (A). The following figures give an idea as to the yield from income-tax and its contribution to the revenue of the land :—

REVENUE.

PRINCIPAL HEADS	Budget. 1913—4 £	1918—19 £
Land Revenue ..	21,391,575	22,358,500
Opium ..	1,614,878	3,191,800
Salt ..	3,445,305	3,492,200
Stamps ..	5,318,293	5,928,000
Excise ..	8,894,300	10,373,300
Customs ..	7,558,220	10,714,400
Other Heads ..	5,485,175*	†10,183,900
	53,728,746	66,242,500
Interest ..	1,352,119	3,552,600
Posts and Telegraphs ..	3,598,579	4,782,800
Mint ..	339,841	376,000
Receipts by Civil Department ..	1,408,286	1,956,100
Miscellaneous ..	772,579	1,295,200
Railways Net Receipts ..	17,625,634	22,983,700
Irrigation ..	4,713,159	5,320,400
Other Public Works ..	298,640	304,900
Military Receipts ..	1,369,652	1,532,700
	85,207,175	108,346,900

* Includes £1,950,250 on account of income-tax.

† Includes £6,313,200 on account of income-tax.

Very likely the Indian Income-tax legislation has been closely modelled on the lines of English legislation. The Indian minimum of Rs. 2,000 corresponds to the English minimum of £160. The Indian Super-tax of 1917 over Rs. 50,000 corresponds to the English Super-tax of 1910 over £5,000. We are not warranted, however, in the inference that the one is a mere copy of the other. There are certain variations from English taxation and adaptations to the Indian conditions. The English incomes between £160 and £400 are entitled to an abatement of £160 and the rest as shown under :—

Incomes	*Abatement.*
£ 400 @ 500	£ 150
£ 500 @ 600	£ 120
£ 600 @ 700	£ 70

Corresponding to this, we have in the Indian system, the reduction of income-tax, where margin above a certain limit is small according to Section 17 of Income-Tax Act, 1922, as amended by Act XV of 1923. An illustration is given below :—

Income	Tax payable if Section 17 had not been passed	Tax payable under Section 17
Rs. 1,999 ..	Nil.	Nil.
,, 2,000 ..	52—1	1—0
,, 2,020 ..	52-10	21—0
,, 4,999 ..	130—4	130—4
,, 5,000 ..	151—4	131—4

Just as the English income-tax is levied at rates varying from year to year, the Indian tax also is liable to variation, though in practice it does not vary to the extent that the English tax does vary. That which however is an effective instrument in the hands of the Indian financier (as the income-tax is in England) is the salt tax. Usually in recent times the rate of the English income-tax has been 8 to 10 *d.* in the £. Its maximum in the 19th century (1855—56) was 1*s.* 4*d.* or 6%. During the South African War it went (1902—03) to 1*s.* 3*d.* On the outbreak of the Great European War in 1914 the rate was raised to 2*s.* 6*d.* or 12½%. A table is appended showing the amount of English income-tax and super-tax and the effective rate per rupee as contrasted with similar figures for the Indian rates. Up to the year 1921—22 the Indian rates of income-tax and super-tax combined were less than half the rates in the United Kingdom and the rates for 1922—23 prescribed in some cases

amount to more than half the English rates. (*Vide* Appendix B.)

We pass on now to two great types of incomes as they depend on the modes of collecting them. The first is a direct levy on the individual's total income. For purposes of this, the whole of the tax-payer's income must be ascertained and ascertainment may be done in two ways, neither of which is perfect. Assessment on the part of the authorities, without declaration from the tax-payer, is likely to be guesswork and in the case of larger incomes leads to glaring inequalities and discrepancies. Declaration by itself is not without difficulties. The temptation to evasion and deceit, the danger of demoralization among the tax-payers and easy-going connivance among the officials are some of the evils. The evils are glaringly so when we remember that, the higher the tax becomes, the greater is the danger of evasion, the greater the difficulty of preventing demoralization. This direct levy was followed in Prussia in pre-war days. The other method illustrates the principle of stoppage at the source. A prominent example is afforded by the British system. The method is to reach the tax-payer's income before he has received it. The holder of consols receives his income diminished. Every debtor becomes more or less an agent of the Government in collecting the income-tax from the creditors. Salaries are also reached by this method of stoppage at the source but the incomes which cannot be so reached are the earnings of lawyers, physicians and the like. Some other method must be adopted in these cases, *viz.*, declaration of income from the tax-payer or inquiry by the tax-collector. A second defect of the method of stoppage at the source is that it does not lend itself to progression in the taxation of incomes. In the words of a famous economist, "The smoothness, ease and certainty of the method of tapping the source are inconsistent with the endeavour to ascertain in one lump the income of each tax-payer, and without this, there can be no application of progression." The device followed in India is a combination, judicious or injudicious, of direct levy and stoppage at the source. Section 16 (2) of the Income-Tax Act of 1922 provides that the amount received by a share-holder in a company by way of dividend shall be increased by the amount of income-tax payable by the company in respect of the dividend received and Section 18 (4) provides that where income-tax is deducted at the source from salaries and interest on securities, the tax so deducted shall for the purposes of computing the income of an assessee be deemed to be income received. These sections have been inserted in order to make it clear that in the case of taxation at the source and of the deduction of the tax at the source it is the gross amount of the income (*i.e.*, including the tax deducted) which is to be taken into account in determining the rate at which an assessee shall be liable to income-tax on the rest of his income and also his income for liability to super-tax.

Finally, let us pass on to consider the importance of income-tax in Indian taxation and to devise some ways and means of augmenting it. Income-taxes in England are fit for re-adjustment from year to year. If they are raised in one year, all incomes bear the extra burden. If lowered another year, all get the benefit of the reduction. Hence the income-tax in England being raised in times of financial stress and lowered in ordinary times, serves to keep the public receipts adjusted to the expenditure. In this respect the tax in India which bears a resemblance to the English income-tax is not the income-tax but the Salt-tax which is regarded as a reserve of financial power to be drawn upon in times of need, offering a temptation by reason of its facility with which it can be increased without trouble and change in machinery of collection. While in countries like England where industrialism has come to stay and where the mechanism of credit is in full working order owing to improved banking facilities, income-tax is likely to yield much, its yield in countries like India where agricultural economics still holds the field, is poor and it is likely to stand in the way of the country's industrialization by smothering the infant industries and enterprizes.

Under the provisions of Section 4 (3) of the Income-Tax Act, agricultural income is exempted from the tax. Now it is quite clear why this section has been inserted. Manifestly it is for purposes of what will otherwise turn out to be a double tax. Our contention is that *in some cases*, agricultural income must be exempted from *all kinds of taxes* and that in *some other* cases, it must be *subjected* to *every kind* of taxation. As it is, as the land tax at present is levied, there is neither equality nor equity in its incidence. It is assessed upon each acre according to fertility and other conditions, irrespectively of the ability of the owner of land to pay. The result is, that the agricultural labourer—as often the cultivator

is—is subject to an income-tax, when craftsmen, artizans, petty shop-keepers and money-lenders, comparatively well-off are exempted from it. When non-agricultural income below a certain amount is exempt, it stands to reason that agricultural income too below a particular limit should be exempted; hence the contention that in some cases, agricultural income should be liable to no assessment of any kind. The same principle *pari passu* underlies the contention that in some cases, agricultural income must be amenable to all kinds of assessment. We have only to take the case of the permanently settled areas. They are not making their proper contribution to the growing expenses of the State. It is a grave injustice to other provinces which have to bear the burden of increasing taxation and so it is contended that the rule "agricultural income should be exempted from taxation" should not be enforced in Bengal and other permanently settled areas. Hector in his "Indian Fiscal Administration" says, "If, therefore, the finances of the country are to be maintained in a state of solvency, either we must impose heavier burdens on the people in new and unfamiliar shapes, raise the cost of living to the poor, exact the highest contribution which can be levied from the other provinces with each revision of their land assessment—in fine, cripple the country's resources, arrest its prosperity and disturb its peace—either we must do this or Bengal must pay her fair share of revenue along with the other interests and other provinces, constituting the Empire. As a measure of justice as of necessity, the Bengal assessment must be remodelled and the fact that the conditions—the purposes or intentions—with which or upon which the settlement was made, have not been fulfilled, adds increased force to the demand." Increased weight is lent to this contention by modern historical research. The view is now generally held that the permanent settlement was the outcome (say, a virtue) of necessity. Now the same necessity, "the mother of invention, not the tyrant's plea", dictates the liability to assessment of agricultural income in permanently settled areas, hence the advocacy that in some cases, agricultural income must be amenable to every kind of taxation.

To return to the list of exemptions, pensions, leave-allowances and salaries drawn from the Indian revenues when the residents are outside British India, are not assessed. One fails to understand whether a pension ceases to be as such, when the resident is outside British India, as long as he draws it from the Indian exchequer. If pensions, etc., are not assessed in India, they must be assessed in England at the English rates. Why should rich England grudge to leave the income-tax on pensions, leave-allowances and salaries, etc., to poor India? We have to remember in this connection that by reason of her political dependence, India foregoes the advantage, which any self-governing country will have, *viz.*, the pension being spent inside her borders. The same thing holds good in the case of salaries and leave-allowances.

Other measures also may be devised. There are certain companies whose revenues are partly or wholly derived from India. There are also foreign shipping companies whose business is more or less confined to India. It stands to reason that they must be assessed to income-tax in poor India. In India itself, there are certain clubs and associations which are not assessed. The rules must be enforced against them. The race courses in different provinces yield incomes. Why not they be assessed?

APPENDIX A.

i. Rates of Income-tax.—

(*a*) In the case of every individual, every unregistered firm and every undivided Hindu family:—

1.	When the total income is less than Rs. 2,000 ..	Nil.
2.	When the total income is Rs. 2,000 or upwards but less than Rs. 5,000	5 pies in the rupee
3.	,, 5,000 ,, 10,000	6 pies ,,
4.	,, 10,000 ,, 20,000	9 pies ,,
5.	,, 20,000 ,, 30,000	1 anna ,,
6.	,, 30,000 ,, 40,000	1 anna 3 pies in the Re.
7.	,, 40,000 or upwards	1 anna 6 pies ,,

(*b*) In the case of every company and every registered firm, whatever its total income .. .. 1 anna 6 pies in the rupee.

ii. Rates of Super-tax:—

In respect of the excess over Rs. 50,000 of total income

1. In the case of every company	1 anna in the rupee
2. (*a*) In the case of every Hindu undivided family :—	
(i) In respect of the *first* Rs. 25,000 of the excess	Nil.
(ii) for every rupee of the *next* Rs. 25,000 of such excess ..	1 anna in the rupee
(*b*) In the case of every individual, unregistered firm for every rupee of the first Rs. 50,000 of such excess	1 anna ,,
(*c*) In the case of every individual, unregistered firm and every Hindu undivided family:—	
(i) for every rupee of the *second* Rs. 50,000 of such excess ..	1½ annas in the rupee
(ii) ,, *next* ,, 50,000 ,, ..	2 annas ,,
(iii) ,, ,, 50,000 ,, ..	2½ annas ,,
(iv) ,, ,, 50,000 ,, ..	3 ,, ,,
(v) ,, ,, 50,000 ,, ..	3½ ,, ,,
(vi) ,, ,, 50,000 ,, ..	4 ,, ,,
(vii) ,, ,, 50,000 ,, ..	4½ ,, ,,
(viii) ,, ,, 50,000 ,, ..	5 ,, ,,
(ix) ,, ,, 50,000 ,, ..	5½ ,, ,,
(x) ,, of the remainder of the excess ..	6 ,, ,,

APPENDIX B.

1922—23. Table showing the amount of English Income-tax and Super-tax and the effective rate per rupee contracted with similar figure for Indian Rates.

English				Indian		
Income Rs.	Income-tax Rs.	Super-tax Rs.	Effective rate per rupee Rs. A. P.	Income-tax Rs.	Super-tax Rs.	Indian rate per rupee Rs. A. P.
30,000	6,563	..	0 3 6	2,343	..	0 1 6
45,000	11,250	1,312	0 4 5 3/5	4,218	..	0 1 6
60,000	15,000	3,187	0 4 10 1/5	5,625	625	0 1 8
75,000	18,750	5,437	0 5 1 9/10	7,031	1,562	0 1 10
90,000	22,500	8,062	0 5 1 1/5	8,437	2,500	0 1 11⅓
105,000	26,250	11,062	0 5 8 1/5	9,844	3,594	0 2 0 4/7
120,000	30,000	14,437	0 5 11 1/10	11,250	5,000	0 2 2
135,000	33,750	18,187	0 6 1 4/5	12,656	6,406	0 2 3 1/9
150,000	37,500	21,937	0 6 4	14,062	7,812	0 2 4
225,000	56,250	40,687	0 6 10 7/10	21,094	17,969	0 2 9⅓
300,000	75,000	59,437	0 7 2	28,125	31,250	0 3 2
450,000	112,000	100,687	0 7 7	42,187	68,750	0 3 11⅓
600,000	150,000	145,687	0 7 10 3/5	56,250	120,312	0 4 8½
Companies			0 4 0	..		0 2 6

Vetiver Oil.

By C. D. V. Georgi.*

Vetiver oil, an essential oil, is obtained by the distillation of the roots of the vetiver plant. This plant is a perennial grass, belonging to the same Natural Order—Gramineae—as citronella grass and lemongrass, in which the leaves contain the essential oil. In the case of vetiver it is interesting to note that the leaves are odourless, the roots being the only part of this plant which yield an oil on distillation.

It is thought that the publication of the results of an investigation carried out recently at the Department of Agriculture will be of interest in spite of the fact that there is only a very limited demand for this oil.

The supply of roots for the experiments was obtained from the Government Experimental Plantation, Serdang, where small areas of this crop are under cultivation.

The roots have been distilled to determine the yield of oil and samples of the oil have also been forwarded to the Malay States Information Agency, London, for valuation.

Vetiver grass is known botanically as *Vetiveria zizanioides*, Stapf.

This grass is but little known in this country; in India, where it is found widely distributed and where the dried roots are used for a variety of purposes, it is known as *Cus-Cus or Khas-Khas*. The dried roots are made into baskets and mats (chicks), the latter being hung on verandahs and moistened with water in hot weather, thus perfuming the atmosphere. Bundles of the roots are also placed between clothes stored in wardrobes or boxes, imparting to the clothes the odour of the essential oil, which in its diluted state resembles sandalwood.

In Java there is also a trade in the dried roots, which are known as *akar wangi*, signifying aromatic root.

Vetiver is also cultivated in Reunion; the root is distilled locally, and the oil exported to Europe.

The grass is propagated by root division and appears to flourish best in a light soil, which favours root development. In India, where this plant occurs wild, it is found principally along the banks of rivers and in rich marsh land.

The plant will not thrive under shade, while it is said that root development is stimulated by frequent cutting of the grass.

It has been found that the oil content increases up to the time of the flowering, so that if the roots are required for distillation they should be harvested just before this time.

The roots are dug up, separated from the stems and washed in running water to remove adhering stones and soil, and then steam-distilled. On account of the low volatility of this oil the distillation is lengthy, requiring several hours to complete. In the investigations carried out in the Department it was found that a period of about 10 hours was required to complete the distillation of a batch of roots.

The yields of oil obtained from fresh air-dried roots varied between 0.50 and 0.65 per cent by weight, that is to say, 1 ton of roots will give 12 to 14 lbs. of oil. The weight of roots obtained from the experimental areas was at the rate of about half a ton per acre, corresponding therefore to a yield of 6 to 7 lbs. of oil per acre per crop. Under normal conditions two crops of roots can be obtained per annum, equivalent on the above figures to a yield of 12 to 14 lbs. of oil per acre per annum.

The sample of oil despatched to the Malay States Information Agency for valuation was forwarded to the Imperial Institute for report. The following is an extract from their report:—

"The sample consisted of a viscid, dark greenish-brown vetiver oil of good aroma. It was examined with the following results, which are shown in comparison with corresponding figures recorded for (*a*) oil distilled in Europe from dry imported roots and (*b*) oil distilled in Reunion:—

	Present sample	European distilled oil	Oil distilled in Reunion
Specific Gravity at 15-15° C ..	1.032	1.014 to 1.042	0.982 to 1.020
Optical Rotation ..	Too dark to permit reading	+25° to +40°	+20° to +38°
Refractive Index 20° C	1.524	1.520 to 1.523	1.515 to 1.528
Acid Value ..	35.5	25 to 65	4 to 20
Ester Value before acetylation ..	1.18	10 to 25	5 to 20
Ester Value after acetylation ..	162.0	130 to 160	120 to 150

These results show that the present sample of oil is of normal character.

Vetiver oil is used exclusively in the preparation of compound perfumes, in which the oil, on account of its low volatility, acts as a valuable 'fixer' for more volatile essential oils,

* Through the courtesy of the *Malayan Agricultural Journal*, July, 1924.

Income-Tax Formalities.

By Keble Howard.

A very determined and praiseworthy attempt has been made this year to help you to find out the exact amount of your income. After all, it is high time that you knew whether you were rich or poor. The authorities sympathize with you in your perplexity, and have spared neither pains nor printing in the hope of solving your problem.

In the old days, you may recall, the form on which you returned your income was a very simple affair—a mere single sheet, if I remember rightly. You filled it in with the one hand and no headache, and there was an end of the matter. As for the tax itself, the amount you had to pay was so small that nobody seemed to care very much whether you paid it or not.

Then came the buff form of four pages. This was more complicated. If you claimed relief, you had to set out all your history, past and present, your wife's history, past and present, your own future or expectations for the future, and your wife's future or expectations for the future. Thus the headaches started.

To relieve the headaches, the authorities issued with the buff form a map of the course. This map, or list of instructions, closed every loophole by which you had hoped to escape. It told you, certainly, that you might claim relief if you supported your aunt, but it went on to explain, in minute print, that the aunt must be a certain kind of aunt, and the support must be a certain sort of support, and must be administered in a certain sort of way. And if you claimed relief in respect of an aunt who was not the precise sort of aunt recognized by the authorities, or if your support was not precisely the support they had in mind, or if you sent the poor dear a postal order every Tuesday instead of a post office order on Thursdays, you were liable to be flung into prison for six months, or, if the prisons were all full, have your head cut off.

The result was complete paralysis of the national brain for seven days after receiving the notice in the case of every person liable for income-tax, and suicide in the case of many who were not liable. So the authorities, seeing that something more must be done, issued four pages of instructions instead of one, whereupon all those who could manage it left England and went to live in the Channel Islands—where there is no income-tax. (I understand that the Channel Islands are in danger of a summons for overcrowding. For a long time past there has been standing room only, and hundreds of excellent people are pushed into the sea daily.)

This year the authorities have made the most magnificent attempt ever known in any country. They have sent out sixteen pages of matter in all—eight to be filled in with particulars of your income and your reasons for daring to claim relief, and eight more pages (on white paper) telling you why you ought not to claim relief, and what will happen to you if they can prove that you have misread the instructions.

The eight white pages lie before me as I write. I have not yet mastered them in their entirety, but I do know for a positive fact, that I must not enter on Section B of Form No. 11 any of my income from the profits or rents of quarries, mines, ironworks, gasworks, waterworks, canals, docks, fishings, rights of markets and fairs, tolls, bridges, ferries, and other concerns of the like nature in Great Britain or Northern Ireland.

That is clear enough as far as it goes. If I want to tell them what I get out of canals, for instance, I must apply for a special form. This is only right and decent. The staff of officials who deal with polite matters do not wish to be told what I get out of canals. They could not stand it. Such horrors as that would spoil their lunch and make their tea even more indigestible than it is at present. A special staff of every callous and hardened men have been engaged to hear what I get out of canals.

Another new idea has occurred to the authorities with regard to dividends taxed before receipt. In former years they merely took their income-tax from your dividends and handed you the balance. You looked at the balance—when you could see it—and entered that on the portion of the form which shows that you are a really poor man and therefore entitled to relief.

This year you are instructed to enter the full amount of your dividend before the tax was reduced. That is well meant. They want you to realize how rich you would have been had you been as rich as you really ought to be. The new scheme, in short, is designed to lift up your heart.

Cauvery Agreement.

The agreement concluded between the Madras and Mysore Governments in regard to their respective use of the waters of the Cauvery and its tributaries has opened the way for carrying to completion the great enterprzie, initiated by the Mysore Government in 1911, named after the present Maharaja, the Krishnarajasagara Dam. When completed the reservoir will be the largest of its kind in India, and will be second only to that formed by the Assuan Dam.

Shortly before Viscount Willingdon left Madras the agreement, which had been under negotiation for some years, was concluded. The details of the agreement were not disclosed at the time, but may now be indicated. The Mysore Government is entitled to construct the Krishnarajasagara Dam and a reservoir across the Cauvery at Kannambadi, some nine miles above Seringapatam. The dam is to rise not more than 112 ft. above the sill of the under-sluices now in existence, corresponding to 124 ft. above the bed of the river before construction of the dam, the reservoir having a capacity of 44,827,000,000 cubic feet, measured from the sill of the irrigation sluices constructed at 60 ft. level above the bed of the river up to the maximum height of 124 ft.

The Mysore Government will be at liberty to carry out future extensions of irrigation in Mysore under the Cauvery and its tributaries to the extent of 110,000 acres. This is in addition to and irrespective of the extent of irrigation permissible under rules of regulation annexed to the agreement, *viz.*, 125,000 acres plus the extension permissible under each of the existing channels to the extent of one-third of the area actually irrigated under such channel in or before 1910. The minimum flow of the Cauvery that must be ensured at the Upper Anicut before any impounding is made in the Krishnarajasagara varies from 7½ ft. in the monsoon months of July and August to 3 ft. in January. On the other hand the Madras Government has agreed to limit the new area of irrigation under its Cauvery-Metur project to 301,000 acres, and the capacity of the new reservoir at Metur above the lowest irrigation sluice to 93,500,000,000 cubic feet.

Further Reservoirs.

The contemplated extensions of irrigation in Mysore are to be carried out only by means of reservoirs constructed on the Cauvery and its tributaries. The reservoirs may be of an effective capacity of 45,000,000,000 cubic feet in the aggregate, and the impounding therein is to be so regulated as not to make any material diminution in supplies provided for in the agreement at Krishnarajasagara. The rules for working the reservoirs are to be so framed as to reduce within 5 per cent any loss during any impounding period by the adoption of suitable proportion factors, impounding formula, or such other means as may be settled at the time.

The reservoir storage for power generation purposes now provided in the Krishnarajasagara may be utilized by the Mysore Government according to its convenience from any other reservoir hereafter to be constructed, and the storage thus released may be utilized for new irrigation within the limit of 110,000 acres provided in the agreement. It is laid down that neither in Madras nor Mysore are the limits of extension of irrigation specified to preclude extensions effected solely by improvement of duty, without any increase of the quantity of water used.

New Irrigation.

Nothing in the agreement is to affect the rights of Mysore to construct new irrigation works on tributaries of the Cauvery not included in the first schedule of the 1892 agreement, and the Madras Government is to be at liberty to construct new irrigation works on the tributaries of the Cauvery in Madras. Should the Presidency Government construct on the Bhavani, Amaravati, or Novil rivers in Madras any new storage reservoir, the Mysore Government will be at liberty to construct as an off-set a storage reservoir, in addition to those otherwise provided for, on one of the tributaries of the Cauvery in Mysore of a capacity not exceeding 60 per cent of the new reservoir in Madras. It is provided that such new works are not to diminish nor affect in any way the supplies to which the Madras and Mysore Governments are entitled under the agreement, nor the division of surplus water which may be available on the termination of the agreement.

The agreement is for a period of 50 years. It will then be open to reconsideration in the light of the experience gained and of an examination of the possibilities of the further extension of irrigation within the territories of the respective Governments, and to such modifications and additions as may be mutually

agreed upon as the result of such reconsideration. If in the meantime any dispute arises touching the interpretation or operation or carrying out of the agreement, it is to be referred for settlement to arbitration, or if the parties so agree it is to be submitted to the Government of India.

Raising the Dam.

The conclusion of the agreement clears the way for the Mysore Government to bring the great project to completion. Its objects are to guarantee the continuity of power against short supply in the river during the summer months, to increase the amount of power generated, so as to meet the ever-growing demands, and to bring a larger extent of land under irrigation in a country subject to frequent drought. The dam will be capable of storing 44,827,000,000 cubic feet of water above the level of the high level canal sluices. About one-fourth of the water will be used for power generation and the balance for irrigation. The height of the dam is to be raised from 80 ft. to 124 ft. The total length of the dam when completed will be 8,600 ft., including the waste-weir, and it will bring under submersion some 49½ square miles. The estimated cost of raising the dam and making the canals and the connected works will be five crores of rupees.

A technical committee has recommended that the work should be pushed forward so as to bring the dam to a sufficient height to surplus the floods of the 1925 season through the sluices at plus 80 and in the open at plus 106. With regard to the number and dimension of the sluice openings at plus 80, the expert committee reported that, so long as due provision is made for the total surplus in capacity of the maximum calculated flow of 250,000 cusecs, the number of sluices 10 ft. by 20 ft. each at plus 80 level may be reduced from 20 to 16, omitting the four at the northern end of the by-wash channel.

Swiss Limited Companies.

At the end of 1923, there were 8,227 firms inscribed in Switzerland as limited companies, whereas in 1902 the number was only 2,203. In this same period the capital invested in these companies increased from 1.8 to 5.69 milliard francs. That is to say, whereas the number of companies was quadrupled, the share capital was quintupled. The explanation of this disproportion appears to lie in the enormous increase of comparatively small concerns which transformed themselves into limited companies and, from statistics on the subject, it is to be seen that these small firms were mostly in the building trade. Of the total given above, 2,965 firms belonged to this branch with an invested capital of 168 million francs.

From 1902 to 1923, the average amount of capital per company sank from 951,000 to 296,000 francs. It is noteworthy that, in the Swiss Commercial Register, there are to be found no less than 1,452 what might be called miniature limited companies with a capital of less than 10,000 francs. It appears that the large increase in the number of limited companies (Aktiengesellschaften) is due to the advantages which this form of company offers and to the lack of a form of company similar to the German G. m. b. H.

Switzerland recognizes five forms of company: the simple partnership, the Kollektivgesellschaft, the Kommanditgesellschaft, the Aktiengesellschaft and the Genossenschaft. The simple partnership is exactly similar to the English partnership. The partners are not obliged to register the company. The Kollektivgesellschaft is a more extended form of the simple partnership. The company has to be registered as such and a balance sheet prepared. The individual partners are each and all severally and unitedly responsible for the debts of the firm. In the Kommanditgesellschaft, at least one of the partners is responsible to an unlimited degree for the company's debts, whereas the remaining partners are only responsible up to an agreed amount, usually the sum which they have invested. The Aktiengesellschaft is the English limited company where shares are issued and the company as such is responsible for its own debts, the share-holders having no personal responsibility. The Genossenschaft is a form of corporation in which the Articles may specifically exclude the personal responsibility of the members but, if such exclusion is not specifically stated, the members are responsible personally for the company's debts. It is, of course, not possible to give, in the scope of this article, the full privileges and responsibilities entailed by the various kinds of companies.

Economics in the West.

The Electrical Industry.

London.—The Report for 1923 of the Association of Swiss Electro-Technical Manufacturers refers to the depression which still exists in this branch of the trade and this is largely ascribed to the protective measures which certain foreign countries have taken. Prohibitive duties on lamps are to be met with, it seems, in Italy, France and Spain, while Great Britain has practically closed her market for radio appliances owing to the fact that licenses are only granted on the specific understanding that no foreign-made appliances are used. In Italy a ten-fold tax has to be paid by users of foreign-made apparatus, which means the practical closing of that market as well.

On the other hand, Swiss manufacturers complain that considerable quantities of foreign-made apparatus are being imported into the country since no restrictions exist. They demand protective measures in turn either by means of import restrictions or, as in Italy, a special tax. Disappointment is expressed that the suggestions made in connection with the new customs tariff did not receive the favourable treatment and consideration anticipated.

The Channel Tunnel.

A meeting of the British Committee of Imperial Defence has decided that the advantages of a tunnel under the English Channel would not be commensurate with the disadvantages from a defence point of view. Further, the view was taken that all that has happend in the last five years in the way of naval, military and air development has tended, without exception, to render the channel tunnel a more dangerous experiment. The British Government has accepted this view and the question is therefore shelved for the time being so far as any British developments are concerned. It is significant, however, that there is a certain amount of opinion in the British Parliament in favour of the scheme and that the Prime Minister has been asked to summon a joint committee of both Houses to consider the whole question in public. It is impossible to say whether the committee will ever meet and what it will achieve if it does meet. It is certain that the present decision of the Government will cause much disappointment in France, where the opinion is generally held that the construction of the tunnel would materially assist trade.

The Soviet and Trade.

There appears to be some hope of a more moderate attitude on the part of the Soviet Government towards foreign companies trading in Russia. The compulsory liquidation of the Russo-Caucasian Co. can, it seems, be annulled if the Commissar for Foreign Trade agrees to the registration of the company and thus allows it to continue trading. The Soviet authorities have so far been very reticent in the matter and have given no reason for their previous refusal to register the company.

The Russian policy at the present time is so contradictory as to be almost transparently clear. On the one hand, the Third International, in which members of the Soviet Government take a prominent part, has just issued a violent manifesto against the experts' scheme for settling the reparations question and against law and order in general. On the other hand, desperate efforts are being made to revive interest in the Anglo-Russian Conference in London, and the greatest interest is being professed in trade negotiations with Germany and Italy. If the Soviet authorities really think that this kind of double dealing passes unnoticed, they are even more lacking in sense than one has hitherto supposed.

The Rubber Outlook.

The rise in the price of rubber to 1*s.* per lb.—a price which, if my memory is correct, has not been touched for several months—has naturally had an instantaneous effect on the share market, which has ever been ready during this prolonged period of depression to respond hastily to any encouragement, however slight and however scanty its foundation is. The fact is, of course, that there is very little stock on the market, for the present holders, speaking generally, are probably determined to see the thing through, so that a very small development of buying can produce quite disproportionate results. The references I have made to the rise must not be taken as meaning that I anticipate another descent in price; on the contrary, I believe that now we may look forward to a gradual rise until the commodity is in the neighbourhood of 1*s.* 3*d.* The immediate cause of the present movement is an expansion of demand, and if, as would appear to be probable, this tendency steadily develops, the effect must be obvious.

Canadian Trade and Finance.

Montreal, July 1st, 1924.—While general business in Canada has continued comparatively quiet during the last month, certain favourable developments have taken place, notably a further increase in wheat prices, which advanced from $1.06⅜ per bushel on May 21st to $1.16¼ per bushel on June 21st. Since the middle of April, wheat has appreciated in value approximately 17 per cent. The indications are that the 1924 world crop will be smaller than that of 1923, the prospective decline in the production of the United States being a specially important factor. If the expected 93 million bushel reduction in their wheat crop takes place, their net wheat and flour exports for the 1924—25 season will not amount to anything very substantial. Under the influence of the tariff, prices for the better grades of wheat in the United States may easily rule materially higher than those in Canada, a situation which would further stimulate the export of Canadian flour.

Whether wheat prices, after their very substantial rise, will or will not be subject to a reaction, it is obviously impossible to say, but the fact that such an appreciation in value has been possible seems to indicate that a turn in the tide has come, and that we may expect better wheat market conditions in the future, with all that that implies in the way of a more prosperous West. The situation which has existed in the Canadaian West during the last few years has definitely held back the progress of this country, so that a solution of the problem could be expected to react favourably on business throughout the Dominion.

General tiade shows little change over the preceding month. A comparatively cold spring has tended to affect retail and wholesale trade unfavourably, but merchants are hoping that warmer weather will result in an improvement in sales.

Resumption of Gold Payments.

Among the comments made in regard to the article in our Monthly Letter for May, advocating a return to the gold standard in Canada, was one in which surprise was expressed that a resumption of gold payments should be recommended at a time when the gold situation in the United States is such that stability in gold prices is not assured, and a rise in prices is well within the bounds of possibility. We do not think that the situation in the United States should make Canada hesitate to return to the gold standard immediately. The business of that country is conducted on such a scale that a moderate rise in prices should serve to absorb incoming gold, even if all importations were added to circulation. Having in mind the comparative success achieved so far by the Federal Reserve Board in its policy of stabilizing prices, there seems no risk of price fluctuations, in either direction, so violent as seriously to affect the usefulness of the gold standard.

It should also be noted that the fact of Canada not being on the gold standard would not prevent Conadian prices from rising, if those in the United States did so. The price level in the latter country could not remain on an appreciably higher level than ours, unless it were possible for Canadian funds to be at a more or less substantial premium in the United States. If this were not possible, lower Canadian prices would attract a sufficient increase in U. S. purchases to equalize the two price levels as regards commodities we might sell to them, while with Canadian funds in New York no higher than par, the prices of our imports from the United States would naturally increase, with the increase in their domestic price level. Now as matters stand, Canadian funds can only rise a fraction above par in New York before it becomes advantageous and possible for them to ship gold to this country in settlement of their obligations ; and to disassociate our price level from that of the United States during a period of inflation there, it would be necessary to prevent gold imports into this country, a step which is possible legally, but which in practice would present many difficulties.

We continue of the opinion that there is no real obstacle to the resumption of gold payments in this country, and that such action would bring good results.

The Dawes Report.

The Committee of Experts, headed by General Charles G. Dawes, made its report on the Reparations Question to the Reparation Commission on April 9, 1924. It indicated that time was of the essence of the contract in this matter, and that the Committee could accept no responsibility for the success of the plan, should there be undue delay in giving effect to its suggestions. The plan met with general approval in Europe, but to-day, over

two months after its publication, it is still impossible to say that acceptance of the recommendations is assured. The chances for acceptance have, however, been improved by recent political changes in France, and it should soon be clear whether the plan will be immediately adopted as a whole, or whether continued discussion and amendments will tend to destroy its value.

This Dawes Plan is the first one in which common sense and practical business principles have been the deciding factor in determining the main provisions. It accepts the fact that a country with a disorganized currency is badly handicapped, both in the conduct of its business affairs and in the operation of its public finance, and consequently is in a poor position to pay foreign obligations. The Report recommends the establishement of a new German bank of issue, which, through the sale of capital stock, payable in gold or its equivalent, and through receiving on deposit the proceeds of an 800,000,000 gold mark loan to be floated by Germany abroad, would start operations with an adequate gold reserve and would provide Germany with a stable and trustworthy currency. When once the German Government finds it pssible to collect taxes in a currency which is not depreciating rapidly in value, it is thought that the German Budget can be balanced, but in order to ensure the successful reorganization of Government finances, too much is not demanded in the way of reparation payments from public funds; on the contrary, the German Government would be called upon but lightly during the first three years of the Plan's operation, and would not be called upon for the standard contribution of approximately $313,000,000 until the fifth year.

Searching for some definite source of income from which reparation payments could be made, the Committee has chosen the public railways of Germany as the main contributors. Owing to the decline in value of the mark to a point approximating zero, the fixed obligations of these railways have practically disappeared and the Committee suggests the issue of eleven billion marks of 1st Mortgage 5% Bonds against them, to be handed over to the Reparation Commission.

It is also recommended that five billion marks of 1st Mortgage 5% Bonds should in the same way be issued against German industries. Each concern would be responsible for an amount to be later determined.

A transport tax of about 6% on gross receipts from railway traffic would continue to be levied on the railways, the proceeds to be used for reparation payments.

Disregarding the increase in payments which will be required, if German prosperity warrants it, contributions in a standard year would be as follows :—

From the German Government.....	1,250,000,000	Marks
" Interest on Railway Bonds.....	660,000,000	"
" Interest on Industrial Bonds....	300,000,000	"
" Transport Tax.....	290,000,000	"
	2,500,000,000	"

It was not within the power of the Committee to settle the total bill for reparations. It has laid down the maximum amounts which would be payable over a considerable period of years. It has specified the sources from which these sums shall be obtained and the maximum amount from each source. The Committee affirmed the principle that taxation in Germany should be commensurate with taxation in other countries, but left it possible for reparation payments to be made, without an excessive burden being imposed on the people.

The most important provision in the whole scheme is found in the recommendation that reparations should be payable in terms of gold marks and placed to the credit of the Reparation Commission in the new German bank, leaving the transfer of the funds out of Germany into France or England, or elsewhere, as the responsiblity of a Committee, which would no doubt be appointed by the Commission.

In practice, the only way of making these transfers will be for the Committee to purchase sterling, dollars, francs or some other currency in the exchange market; and the Committee can do this only to the extent that Germany develops a surplus of exports over imports, including in these terms not only goods and services, but all the transactions which take place in the course of international business and finance. To the extent that Germany attains such a surplus of exports over imports, the Committee will be able to buy foreign exchange and transfer the funds accumulating from reparation payments within Germany. They are not obliged to attempt the impossible, and when in their opinion it would be wise to cease purchasing foreign exchange, because of the limited amount available, they are permitted to do so, allowing the funds to accumulate in Germany, where

they may be used by the new bank for short money operations. This accumulation may take place up to the amount of two billion gold marks and an additional three billion marks may be invested in German industries. This is the limit of the amount which may be held in terms of marks, and should the figure of five billion marks be arrived at, subsequent reparation payments by Germany would be governed by the amount which it was possible to transfer out of the country.

We come back to the fact that payment of reparations depends on the success attained by Germany in selling her goods all over the world. Many countries feel nervous at the prospect of having their markets flooded with cheap German goods, but apart from the reverses which may be suffered by industries manufacturing goods in which Germany was pre-eminent before the war, the general effects of Germany's return to active commercial life will not be bad. Her increased sales will be accompanied by increased purchases of foodstuffs and raw materials, and the world as a whole will benefit.

The world owes much to the head of the Committee which drew up the Report. General Dawes has had a distinguished military career and has done notable things in civil life. He was responsible for the building up of an important Bank in the United States and for the inauguration of the Budget System in United States Government finance. With such a record, it is not surprising that he has been chosen as Republican Candidate for the Vice-Presidency of the United States.

Building Conditions in Canada.

The amount of building in progress or in prospect has always been regarded as a fair index of commercial prosperity, and it is interresting at this time to review the situation as it stands in Canada.

The figures given below of contracts awarded, compiled by MacLean Building Reports, Ltd., give an accurate view of building in Canada immediately following the war.

1918 ..	$ 99,842,100	1922 ..	$331,843,300
1919 ..	190,028,300	1923 ..	314,254,300
1920 ..	255,605,500	1924 ..	300,000,000
1921 ..	240,133,300		(estimated)

During the war, our time was fully taken up with other things, and building suffered. Immediately following the war, supply endeavoured to catch up with demands, and a great increase in building took place, the movement reaching its peak in 1920. Following that, there was a slight recession in the value of contracts awarded, the recession being most notable in business and industrial building. Residential construction continued its upward trend. When the fall in the general price level is taken into consideration, it is evident that the volume of building as a whole did not suffer. The year 1922 saw a large increase, particularly in Ontario and Quebec. In that year the value of contracts awarded for residential building throughout Canada jumped from 76 million to 104 million dollars, industrial from 16 to 25, and engineering from 62 to 120 millions. The change in the West and in the Maritime Provinces was negligible, and the increase in engineering construction in the Central Provinces is accounted for by great activity in water-power development, by work in connection with the Welland Canal, and by ambitious road-building programmes. Last year saw reductions in almost every class of construction, although it continued on a high level, as compared with 1920 and 1921, in Ontario and Quebec.

According to estimates made before the war, in excess of 37,000 new dwellings were then needed in Canada each year to take care of additional population and make good our fire losses. No such volume has been attained, and it is apparent that this estimate has not the applicability which it had in pre-war days. It was made during the years when over 300,000 immigrants were coming to our shores annually. The falling off in immigration in itself would call for a revision of the estimate. Moreover, the gain in population through immigration in former years was largely net, and the exodus to other countries did not offset the effect produced by the newcomers, as it does at present. Last year, only 18,393 residences were erected, as compared with 21,054 in 1922. In a few of the larger cities, rents have shown a slight downward tendency, as regards houses commanding what might be looked upon as moderate rentals. The scarcity of dwellings, which existed in 1919 and 1920, has evidently been largely overcome, and even at points where this is not yet entirely true, and where rents are still comparatively high, a revision downward this year or next seems distinctly probable. As rent is a very important factor in the cost of living, under present conditions, any reduction will have a favourable effect.

To show the trend at present, figures for contracts awarded during the first quarter of the

year, compared with the same period in 1922 and 1923, are given below :—

1st Quarter	Residential	Business	Industrial	Engineering	Total for Dominion
1922	12,343,700	9,590,400	1,158,500	9,433,300	32,575,900
1923	11,432,600	16,788,500	8,756,500	6,129,800	43,107,400
1924	9,230,500	12,824,500	1,208,800	16,108,300	39,372,100

Residential construction in the first three months of 1924 was only 23.4 per cent of the total for the quarter, as compared with 37.8 per cent and 26.5 per cent respectively in 1922 and 1923. April of this year registers a substantial improvement in this respect, and residential building comprises 31.5 per cent of the total of $30,198,800 for the month. This total is only slightly below the corresponding figure for April of last year, although the total construction for the four months ending April is in excess of four and a quarter million dollars below 1923.

While building costs have been steady over the last two years, and have fluctuated within a 5 per cent range, both the cost of material and wages of skilled and unskilled labour are still relatively high, and prove a deterrent to those contemplating new building.

The prevailing feature in regard to the condition of firms in the building trades seems to be that the rather drastic shake-out of 1920 and 1921 has resulted in great care being exercised in the extension of credit, so that the larger concerns are in most cases being very conservatively managed. Small dealers at many points still find conditions difficult.

In districts where the main building projects are for educational and religious purposes or where large public and private enterprizes are in hand, collections are good. So far as the general run of building is concerned, they appear to be slow, but as credit has been extended in general with some care by the better houses, the slowness of payments is not more marked than it was a year ago, and does not indicate a change for the worse in the situation.

August 1st, 1924.—To take care of maturing obligations, and to fund a portion of its short-term debt, the Dominion Government will probably make a new issue of bonds within the course of the next few months. Much interest is being shown in regard to whether this loan will be floated in Canada or in the United States. While borrowing abroad has the disadvantage of increasing the annual drain of funds out of this country to cover interest payments, it might be a wise act to place in New York a good portion of the forthcoming issue. For one thing, an issue payable in New York funds could probably be sold on a slightly more advantageous interest basis than a Canadian flotation, having in mind that Dominion Government 5% bonds, maturing 1943, sold in Montreal on July 19th at $100.70, to yield 4.96 per cent, while, in New York, Canadian 5% bonds, maturing 1952, sold at $102¾ to yield 4.86 per cent.

The maturing obligations are held almost entirely in Canada, so that if the funds to pay them were brought from south of the border line, a considerable amount of Canadian capital would be made available for other purposes. Moreover, an additional consideration in favour of drawing on the New York money market is the fact that the transfer of such a large volume of funds from the United States to Canada would not only bring Canadian currency back to par in New York, but would probably result also in the shipment of gold to this country, giving the Dominion Government an excellent opportunity to resume gold payments, and prevent any further fluctuations in our exchange rate with the country with which we do over 50 per cent of our foreign business.

The balance sheets of the American "member" banks, which dispose of about 75% of the total credit available for commercial and industrial purposes in the United States, show an extraordinary increase in the demand for credit. In the five months from March till the end of July there were investments amounting to almost 26½ milliards, or more than 500 millions in excess of the returns for the corresponding period of 1920. In this connection it must be borne in mind that the rate of interest demanded in the United States is not particularly high. Bank deposits are likewise substantially higher this year than last, and almost two milliard dollars in advance of the returns of three years ago. On the other hand, the loans negotiated by the "member" banks this year fall short considerably of the total attained in 1920. Noticeable changes have also taken place in the banks' holdings of securities. Stocks of State bonds and consols have receded, but the holdings of constructional and other company obligations have advanced materially. On the whole the position of the banks is good ; they are in possession of considerable reserves, well in excess of the credit demands of industry and commerce, besides which they have profited by the accumulation of gold in the United States, which has enabled the note banks to increase the fiduciary circulation without incurring the danger of inflation.

Agricultural Notes from U. S. A.

Washington, 15th June 1924.—At the seventeenth annual meeting of the American Home Economics Association at Buffalo, N. Y., June 30 to July 4, 1924, some of the newer phases of the work of the Bureau of Home Economics will be brought to the attention of this large and important group of specialists for the first time. On Wednesday, July 2, Dr. Louise Stanley, chief of the Bureau, will open the reports on current or recently completed researches in food and nutrition by describing the work of the Bureau during the period she has directed it. Further reports on what the Bureau is doing will be presented by Dr. C. F. Langworthy and Dr. Minna C. Denton. Doctor Stanley will also talk at the last evening session of the conference on the national and international responsibilities of home economics as seen from the department standpoint.

Discussion of the practical working out of budgets and accounts, one of the topics of the homemakers' group committee, will be led by Hildegarde Kneeland, who directs the division of economic studies of the Bureau. She will describe some of the studies that are being made or contemplated by her section. Ilena M. Bailey will speak before the household management group on time studies of women's household work, as carried on by the Bureau of Home Economics.

The House Fly in Winter.

Where does the annual crop of flies come from, is a question frequently asked of the Bureau of Entomology, United States Department of Agriculture. The prevailing opinion that the house fly lives through the winter as an adult, hiding in cracks and crevices of buildings, appears to be erroneous. Under outdoor conditions house flies are killed during the first really cold nights—that is, when the temperature falls to about 15° or 10° F. In rooms and similar places protected from winds and partially heated during the winter flies have been kept alive in cages for long periods; but they never lived through the entire winter. There is no reliable evidence whatever that adult house flies emerging during October and November pass the winter and are able to deposit their eggs the following spring, although they may continue active in heated buildings until nearly the end of January. On the other hand, there is evidence that house flies pass the winter as larvæ and pupæ, and that they sometimes breed continuously throughout the winter. In experiments at both Dallas, Tex., and Bethesda, Md., house flies have been found emerging during April from heavily infested manure heaps which had been set out and covered with cages during the preceding autumn. In the Southern States, during warm periods in midwinter, house flies may emerge and become somewhat troublesome; they frequently lay eggs on warm days.

The second way in which the house fly may pass the winter is by continuous breeding. House flies congregate in heated rooms with the approach of the winter season. If no food or breeding materials are present they eventually die. However, where they have access to both food and suitable substances for egg laying they will continue breeding just as they do outdoors during the summer. Even in very cold climates there are undoubtedly many places, especially in cities, where house flies would have opportunity to pass the winter in this manner.

To Eliminate the House Fly.

The importance of concerted, organized effort to get rid of flies on the part of whole communities, not only cities, but suburban and rural neighbourhoods as well, cannot be over-emphasized. By the most painstaking care one may prevent all fly breeding on his premises, but it will avail him little if his neighbours are not equally careful. Some sort of co-operation is necessary. One of the first and most important elements in any antifly crusade is a vigorous and continued educational campaign. It has been the experience of those who have undertaken such crusades that people generally regard the fly as a somewhat harmless nuisance and that the first work of the campaign was to bring the people to a realization of the dangers from flies and the possibility of getting rid of them.

The antifly crusade is a matter of public interest and should be supported by the community as a whole and engineered by the health officers. But health officers can do little toward the necessary work of inspection and elimination without funds, and therefore the support of the campaign must manifest itself in increased appropriations for public-health work. Very often it is lack of funds which prevents the health officers from taking the initiative in the antifly crusades, and there

must necessarily be much agitation and education before they can profitably take up the work. Here lies a field for the best energy, initiative, and leadership of civic associations, women's clubs, boards of trade, and other community organizations.

Children's Diet Improved.

Considerable progress had been made, through home demonstration work, in improving the diet of rural children. A typical instance of what is being done in this direction recently reported to the United States Department of Agriculture is the child-feeding work carried on in two California counties—Santa Cruz and Contra Costa.

This work started with the fundamental idea that child-feeding must be a part of a general nutrition program, in which all possible co-operating agencies such as county nurses, teachers, parent-teacher organizations, librarians, and others take part, and that the food of the entire farm family is a matter for consideration. The farm mother does not have time to prepare extra or different food for a child; the food on the table for the whole family must be so correctly planned and prepared that the children may have it without detriment.

A number of rural families with children were enrolled as demonstrators during 1922 and 1923. The home demonstration agent gave talks to the mothers on health habits and the diet of children, in which the need for milk, vegetables, and fruit was emphasized. She distributed weight charts and gave demonstrations in the proper preparation of food, organized hot lunch centers in several schools, and with the help of the country nurse, weighed the underweight childern once a month. The childern themselves were very much interested in their own health and correct food. They made posters at school and wrote compositions on the subject. The right kind of a lunch box to bring from home was shown, and the planting of vegetable gardens was stimulated.

In Santa Cruz County 174 homes co-operated in the child-feeding and hot lunch work. Among the underweight children 59 have reached their normal zone in weight and only 2 have failed to do so. In 7 rural schools 244 children have been supplied a hot noon lunch. Eighteen mothers with children too small to go to school have also co-operated with the extension workers. In Contra Costa County, in addition to the work with 225 school children, a nutrition class under a volunteer leader was conducted for six weeks during the summer, especially to help 11 underweight children.

Brining Vegetables.

Brining vegetables is a well-known method of preservation commonly applied to cabbage, in making sauerkraut, and to cucumbers, in making pickles. In the belief that this method of curing could be successfully used with a number of other vegetables, so that a surplus crop could be quickly and easily cared for by the housewife, the Bureau of Chemistry last year conducted a series of experiments which have recently been completed. The vegetables used were martynias, mango melons, burr gherkins, small onions, peppers, green tomatoes, green beans, and cauli flower. Good results were obtained with practically all of these vegetables.

For mangoes, gherkins, and peppers, brining is clearly the best method of preservation. For string beans and green tomatoes brining is not regarded as the best method of preservation, but it may be substituted to good advantage when canning is not convenient. Some of the vegetables brined are more suitable for use in pickles than in any other way. Others can be prepared directly for the table after freshening. Green tomatoes and peppers are recommended especially for utilization in this way.

Martynias grow wild in great abundance in the semiarid regions of south-western United States and can be grown successfully in many other localities. They are recommended for use in pickles, especially in mixed pickles. Mango melons, known by various names, may be brined either green or ripe. The ripe brined mangoes, when freshened, make excellent preserves similar to water-melon preserves. Burr gherkins are very closely related to the cucumber but are not so subject to diseases and insect pests. They are used for sweet, sour, and mixed pickles.

Green tomatoes preserved in a week brine can be eaten immediately. The use of a strong brine is necessary to keep them any length of time. The salt is removed by soaking in fresh water. Tomatoes which develop late in the season and are threatened by frost may be saved conveniently by curing them in brine. Small onions should first be brined before pickling.

The use of the salinometer, a simple, inexpensive apparatus, is recommended in connection with brine curing when many vegetables are to be preserved by this method.

Books in Brief.

Short Reviews of Recent Books.

Co-operative Movement in Japan.

By Kiyoshi Ogata, Ph.D. (Econ)., Professor of the Special Department of Commerce, University of Commerce, Tokio. Published by Messrs. P. S. King & Son, Ltd., Orchard House, Great Smith Street, Westminster, London. Price 12*sh.* 6*d.* net.

Mr. Sidney Webb concludes his preface to this book thus: "It ought to find a place in every Economic as well as every Co-operative library." After carefully reading through this interesting and suggestive volume, the first of its kind covering the whole field of Co-operation in Japan, we feel no hesitation in endorsing this opinion. From this book we learn for the first time that practically the whole adult male population of Japan is found enrolled in membership of one or more of the million and three-quarters of separate Co-operative organizations for economic purposes of one sort or another. The work is a thoroughly exhaustive and comprehensive, with many useful appendices, and ought to be welcome to Co-operators generally in this country.

Sugar in Relation to the Tariff.

By Philip G. Wright, with the aid of the Council and Staff of the Institute of Economics. Published by the McGraw-Hill Publishing Co., Ltd., 6 & 8, Bouverie Street, London, E.C. 4.

This is a volume included in the Institute of Economics Series, under the head of "Investigations in International Commercial Policies" and is a dispassionate study of a most controversial matter connected with the American Tariff. As the Director of the Institute, under whose auspices the volume is issued, states that the present study is one of several designed to reveal the relation of the tariff to agriculture. President Coolidge, in his recent address, states that he stands for "Protection" and America is for tariffs, if for anything. The Institute's studies, therefore, have a peculiarly high value. Sugar is one of those commodities that illustrates "the wide diversity of considerations", as Director Moulton well puts it "that must be weighed before appraising our general tariff policy". The value of the present publication may be gauged from the fact that it has "in whole or in part 'been submitted' to men representing both sides of the question." Mr. Wright has gone to his task well-equipped and he deals with his subject under these heads:—(i) General Information, and (ii) The Sugar Tariff. Under the former we have chapters on the character of the Sugar Industry, on the growth and importance of the Sugar Industry, and on the Production, Consumption, Imports, Exports and Revenue yielded to the United States by Sugar. Under the latter, we have chapters on the magnitude and character of sugar duties, past and present; on the extent to which the domestic industry is dependent on the tariff; on the effects of Tariff charges or prices and growth of the domestic industry; on transportation charges as an element of production; on arguments for and against a duty on sugar; and on the conclusions arrived at in the study. There are, besides, eight appendices giving useful world statistics, etc., relating to sugar, and a full bibliography and an index with copies and references. Altogether an excellent study which ought to be in every library worth its name in India.

Wood Distillation.

By L. F. Hawley, In charge, Section of Derived Products, Forest Products Laboratory. The Chicago Catalog Co., Inc., 19 East 24th Street, New York, United States of America.

This is an excellent practical volume on wood distillation, the literature in which subject is still very meagre. In this monograph—issued by the American Chemical Society—the two distinct industries of hardwood distillation and resinous wood distillation have been kept entirely separate. While in Sweden they are closely connected, in America, there is little connection between them. The author deserves, therefore, to be congratulated on keeping these two distinct industries separate. In the first chapter of each part is a general description of commercial practice without any detailed description. The main part of the book, however, is devoted to a discussion of the chemistry of the raw material, the process and the products. The chemistry of the subject and the engineering phase of the work involved are also borne in mind by the author. The methods of producing the crude products are mentioned, acetic acid, acetone, etc., are omitted. Refined wood alcohol is treated very briefly. The author has,

it is clear, had much to do with commercial plants, besides doing research work in the Laboratory, and the result is a monograph full of most useful first-hand information on a subject on which there is little that is really valuable available. Our wood distillation plant at Bhadravati has been working for some time now and to the people running a publication like this ought to be welcome. In the future, wood distillation is likely to attract greater attention in this country, and the more students of Forest Research go in for advanced study of the kind typified in this volume, the better will it be for the country.

Malayan Agriculture Handbook.

Compiled by the Department of Agriculture, F.M.S. and S.S. Price One Shilling.

This handbook was prepared in connection with the Agricultural Section of the Malaya-Borneo Exhibition, on the occasion of the visit of H. R. H. the Prince of Wales, K.G., to Malaya and is now published in a revised form, for use at the British Empire Exhibition, 1924. It is well drawn up and ought to give an impetus to the starting of new agricultural industries suited to the conditions of the country. The possibilities of various local manufacturing industries, based on the raw products of agriculture, have also to be kept in view in this connection. The book is profusely illustrated and is excellently got up.

Control of Credit.

As a Remedy for Unemployment by J. R. Bellerby. Published by Messrs. P. S. King & Son, Ltd., London.

This is issued by the International Association on Unemployment. We note from the Preface the following:—"Whilst the publication of such a study (as this one) under the auspices of the Association may not be considered as engaging its collective attitude to the problem involved, it is felt that the evidence collected forms a valuable contribution to the study of the relation between current policy and employment, and that its presentation in this manner may serve to stimulate further research and fruitful effort along the lines of the subject treated." We entirely agree in this view of the matter. Mr. Bellerby has brought to bear on the treatment of the subject handled by him a wealth of practical knowledge which is apparent on every page of his Report. We cordially welcome it and should be glad to see it discussed fruitfully both on its theoretical and practical sides. The Report is a thoroughly constructive and ought to prove helpful in the further consideration of this difficult and complicated subject.

History of India.

Vol. II, by V. S. Dalal, B.A. Published by Mr. V. J. Pathakji, M.A., LL.B., Professor of History and Economics, Surat College, Surat.

A melancholy interest to this book, for its talented author died before he could issue it from the Press. Some years ago, we published a review in these pages of the first volume issued by the author and we then said, we believe, that it was a creditable performance, judging from its matter and the manner of its presentation. The Second Volume now issued by Professor Pathakji fully sustains that remark of ours. The work before us is well written, accurate, and comprehensive. It is carefully thought out in regard to its plan and the presentation facts referred to are impressive. It seems truly sad that the author should have been called away just at the moment the fruit of his hard labours was taking shape. But such has been decree of Providence, with which none can quarrel. Mr. Pathakji has provided the book with an excellent likeness of the versatile author and what is more, given us a good and readable sketch of his life. This life, by the way, is typical of the straits to which intellectual Indians are reduced in their own country! Mr. Dalal's work is altogether an excellent one and when a new edition is called for, which we hope and trust it will run to before long, we shall be glad to see it better printed and better presented to its readers. The few typographical errors that mar an otherwise readable publication should also receive attention then. We congratulate Mr. Pathakji on the commendable zeal he has shown in issuing Mr. Dalal's work.

A Forgotten Empire (Vijayanagar.)

By Robert Sewell, M.C.S., Retired. Published by George Allen and Unwin Ltd., Ruskin House, 40, Museum St., London, W. C. 1. Price 10*sh.*

This is a reprint of the original first edition *minus* some of its familiar features. The fifteen illustrations and the three maps have been omitted in this edition. The book has also been reduced in size, the result of the use of smaller type. This is, in our opinion, a great advantage: the book is now more handy and easily managed. For the rest, the book is a mere reprint and no more. Mr. Sewell, who is still happily with us, has apparently

thought fit that his book should go out without any further annotations. We rather think that this view is open to some criticism. Since the last edition was published in 1900, we believe, our knowledge of Vijayanagar Empire has materially iacaeased and many doubts and difficulties in regard to it have been solved or set at rest. Many names in Nuniz and Paes have also been identified. A better account of the origin and growth of the old-world kingdom, of its sovereigns and people, its cities and trade, and its vassals and their possessions could, with some labour, be incorporated in it. The task, no doubt, would require time, but it would be well spent. If the revision on these lines were entrusted to a proper person, the book would, for a long time yet to come, serve a useful purpose. Even as it is, it is an invaluable record of the life and work of a line of Hindu kings who made an Empire of all South India–from the Tungabhadra to the Cape Comorin—and held at bay the invading Muhammadan hosts for nearly 2½ centuries. We cordially welcome this edition, though we feel that it would have been easily more helpful, if at least the old frontispiece map of Vijayanagar had been retained.

Acknowledgments.

1. Report of an Enquiry into Agricultural Wages in the Bombay Presidency, by G. F. Shinas. The Government Central Press, Bombay. Rs. 2—9—0.

2. Proceedings of the Seventh Indian Economic Conference, Bombay. Fort Printing Press, Bombay. Rs. 2—0—0.

3. Prickly Pear as a Fodder for Cattle, by the Department of Agriculture, Bangalore.

4. Annual Report of the Indian Merchants' Chamber for 1923.

5. Flora of the Presidency of Madras, by J. S. Gamble, Part VI. Published by Messrs. Adlaw & Son and West Newman, Ltd., Bartholomew Close, London, E.C. [Through Government of Mysore, Bangalore.] Price 10*sh.* net.

Topics in the Journals.

The Journal of the Ministry of Agriculture for July 1924.—(1) Country Agricultural Committees and Agricultural Development. (2) Machinery on the Farm by H. G. Richardson, M.A., B.Sc.

The Asiatic Review for July 1924.—The Forests and Timbers of Burma, by A. L. Howard.

The General Assurance Society, Limited, Ajmer.

Report for Year ending 31st March 1924.

The Directors of the above Company in submitting their Report for the year ending 31st March 1924, together with Revenue Account and Balance Sheet for the period, state that during the past year 1873 proposals for assurance, aggregating to an amount of Rs. 30,71,134–3–0 were received, and of these 1,308 resulted into Policies, assuring the sum of Rs. 20,49,906–3–0. The annual premium on New Policies effected amounted to Rs. 1,04,957–6–0, the total premium income amounted to Rs. 3,81,798–10–0, being an increase of Rs. 42,652–5–6, over the previous year. The Gross Income from all sources amounted to Rs. 4,67,976–5–0 being an increase of Rs. 85,383–2–1 over the gross income of the previous year. The total outgo, including Claims, cost of Establishment, Commission, Surrenders, Reassurance premiums, and Income-Tax, etc., amounted to Rs. 2,55,081–10–6 leaving a balance on the year's account of Rs. 2,12,894–10–6. Out of the Balance, the sum of Rs. 1,796–0–0 is transferred to Building Depreciation Fund, and Rs. 12,231–12–6 as a reserve against probable loss on Alliance Bank Balances, and Rs. 1,159–0–0 for Depreciation on Furniture and Books leaving a net addition to the Life Assurance Fund of Rs. 1,97,707–14–0, the largest increase in any one year. The average rate of interest earned on the Mean Fund of the Society was 6.4 per cent, inclusive of interest earned on Paid up Capital and of the Investment Reserve Fund of the Society. In view of Consulting Actuary's recommendations in the last Valuation Report, the Directors declare a Dividend at 6 per cent per annum Free of Tax on Paid up Capital for the year ending 31st March 1924. By the death of 38 Policy-holders claims amounting to Rs. 60,930–2–0 have arisen 9 Childern Endowment and 25 Life Policies amounting to Rs. 38,900–0–0 matured. The total number of Policies in force on the books of the Societies is 5,412 assuring the sum of Rs. 79,63,433–10–1. The Directors desire the co-operation of the Share-holders and Policy-holders in pointing out to their friends the benefit of Life Assurance and the favourable terms on which the Assurance may be obtained in this Office. We have no doubt that there will be the fullest Co-operation between the Company and its share-holders in this matter,

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Wages and the Cost of Living in the United States.

By Virgil Jordan.

The most interesting reflection of the present industrial situation in the United States is to be seen in the trend of wages and living costs. The whole business situation is a great deal of a puzzle to the great army of business statisticians, forecasters and economic medicine men that has grown up in America in recent years. The present depression does not fit into their curves and their tables as smoothly as it should according to the immutable economic laws which are supposed to guide the great mechanism of modern business steadfastly and surely to some distant Nirvana where no cycles will disturb the even everlasting course of acquisition. The enormous embarrassing gold reserve, the abundance of credit facilities and the condition of the security market are puzzling factors. Most puzzling of all, however, is the awkward fact that stands forth in the statisticians' figures, namely, that the actual volume of production is by no means low; indeed it is far higher than in 1920 and 1921, and is disappointing only by comparison with the boom in the first half of 1923, when American industry made a lot of new records. Retail trade reports also convey no such picture of profound stagnation as seems at last to be generally accepted whenever business men get together to talk about the thing. The inevitable question raised by all this is: "What does the current business depression consist of?"

There is, of course, no question but that behind the whole situation lies the unsatisfied and unsatisfiable need of an export market, which can be secured only by a restoration of European industry. This may come temporarily through a flow of American capital back to Europe under the Dawes plan now being discussed in the London Conference. But such a device, without a lowering of American tariff walls, in the opinion of the writer, is bound to lead to still more difficult and serious political and economic problems. It affords no sound solution of the problem.

If this is so it means that in the present situation in the United States one sees the reflection of a profound dilemma. Shall the United States use her idle resources as a kind of stimulant to be injected into the exhausted body of European industry in order to keep her own industrial machine going at the artificial and abnormal pitch, induced by the war, or shall the United States frankly face the problem of readjustment and deflation by taking away the artificial protection of her tariff, subsidies and special favours of all kinds and getting back to a sound basis and a healthy balance of industry and trade?

The present situation is the result of a conflict between these two tendencies, between an effort to sustain and increase the inflationary condition that resulted from the war, and an effort to deflate the economic structure to a condition of sounder relationships between industry and agriculture, and between domestic and export trade.

This conflict shows itself in two things:— (1) The effort of the agricultural interests to inflate agricultural prices to a level comparable to that of manufacturing prices, by demanding special subsidies and other arrangements from Congress and by supporting the movement to extend credit to Europe; (2) the disposition

of industry to "deflate" labour. Banking interests are eager to see the American capital surplus used abroad, as interest rates fall here; but they are also disposed to support the industrial pressure for lower wages in order to increase the margin of profit in industrial investment at home.

The result is the curious anomaly in the respective movements of wages and prices and living costs in the United States to-day. There is a strong pressure for wage reduction, which has so far shown itself in unemployment or shorter working hours rather than in reduction of rates. At the same time, living costs, particularly food prices, are rising.

Average hourly earnings of wage-earners in twenty-three basic industries in May were fifty-six cents, exactly the same as in April. Moreover, in fourteen of the twenty-three industries average hourly earnings advanced, as the least capable and lower paid workers were dropped from the payrolls with the curtailment of operations.

Average weekly earnings, however, dropped 2.1 per cent or from $26.67 to $26.10 in the month from April to May, 1924. This is the lowest point reached since March, 1923. The most notable declines were in automobiles, iron and steel, rubber and foundry and machine shop products. This drop in weekly earnings is due largely to a decline of nearly an hour in the average hours of work per week per wage earner —from 47.6 to 46.6 hours, the lowest point since 1921. The industries showing considerable declines are automobiles, hosiery and knit goods, iron and steel, leather tanning, rubber, and foundry and machine shop products. Total employment in the twenty-three industries declined about four points, the greatest decline in a single month since the depression of 1920.

From June to July the total cost of living rose about two-tenths of one per cent, a rise of 0.7 per cent in food prices being offset by a decline of nearly one per cent in clothing prices. The rise in the cost of living is not large in itself, but is significant of the tendency.

If the downward movement of wages continues and the cost of living maintains its upward tendency the situation may be expected to have some significant political effect. Senator La Follette, who has set out on another third party adventure is gathering around him an ever larger assemblage of labour groups and other restless sections of the body politic and may be able to interfere effectively with the smooth course of the two-party conflict in November, although there is little chance of his doing more. Both major parties will apparently make a point of the problem of European reconstruction, but neither will pay much attention to the bearing of the tariff on it. If La Follette's group grapples with this issue, the campaign this summer and autumn may be expected to revolve clearly around the central conflict mentioned above—the conflict between two ways of remedying the present economic situation; but it is doubtful if the issue will be thus clearly presented because La Follette's group includes the agricultural malcontents who rely upon inflationary measures for relief. It is likely that the restlessness and discontent arising from the decline of wages and the rise of living costs will flow in the direction of taking the more immediate and easy measure of relief involved in loaning American capital abroad to create an immediate market for American goods. But if this is done on a large scale, I think both Europe and America will regret it.

Superior and Inferior Races.

Dean Inge is a Christian, who is not sparing in his hard knocks. He said at the Church Parade of the O. T. C. in Edinburgh:—The acute rivalry between Nations arose from a perverted and exaggerated patriotism, which was expressed in the heathenish sentiment, "My country right or wrong." Our recent enemies carried that false idea further than ever, and even declared explicitly that there was no such thing as international morality—a most shocking view, which Governments had often acted on, but had seldom or ever avowed till then. It was combined with a hatred and contempt for other Nations, and with complete denial of any moral obligations to those people outside Europe, who were arrogantly called the inferior races. They had there a reversion to the barbarous tribal morality which even the Middle Ages had outgrown. It was unnecessary to argue that it was quite inconsistent with Christianity. Nationalism was an open revolt against the Gospel, as was the whole theory of superior and inferior races, which was bad science as well as bad religion, just as un-Christian was the desire for territorial expansion without consulting the views of the inhabitants.

Fresh Fruit as Food.

By T. H. J. Hargreaves, M.R.C.S., L.R.C.P.

Farmers frequently complain that they cannot obtain the cost of picking their fruit, nor the cost of baskets or crates in which to ship it to market. Fruit trees have been chopped down, and whole orchards given up to the cultivation of other crops because the people of the cities eat fruit so slowly that little room is made for new shipments, which must be sold for a song or allowed to rot on the ground. If the fruit appetite of the people were normal they would receive great quantities of fruit at much cheaper prices and the fruit farmer who now barely ekes out a living from his labours, would be prosperous and happy.

The History of Fruit.

From the earliest times fruit has been mentioned in the history of the nations. It was man's first food. Gen. 1 : 29. The heathen nations understood its importance. To make it sacred and thus augment its popularity they invented gods and goddesses to look after the various varieties, such as Pomona, Vertumnus and Priapus. The sole care of these deities was to protect orchards from bad weather, insects and robbers.

The fruit of the olive tree grew under the protection of Minerva ; the date was consigned to the protection of the Muses ; the fig and grape were looked after the Bacchus. So greatly did the heathen venerate these two fruits that they elevated Bacchus to the level of their other gods. We have an instance here of a god receiving promotion through the human appetite for figs and grapes. The Greeks always served two courses of fruits, while the Romans always ate fruit for breakfast. The third course of their principal meal consisted of an incredible profusion of the productions of their own orchards. Indeed, the modern method of preserving fruits in a thin sugar syrup was borrowed from Rome. The Romans immersed their fruit in honey for future use. In those days bees were cultivated with great care, and the Romans not only enjoyed the fruits of the orchard, but also the nectar of its blossoms.

Fruit stimulates Appetite.

The business flavour and tempting appearance of ripe fruits stimulate appetite and excite the flow of gastric juices. Fruit juice is medicine. Fruit pulp is food. No pharmacist has ever compounded a nostrum which bears in curative properties the slightest resemblance to pure fruit juice.

The appetite for fruit is a natural one and needs only to be restored. The coarser and grosser flavours of charred meats and heavy gravies have blunted the fine organs of taste but down in the heart of man is an instinctive appreciation of the products of the vine and tree which can never be entirely destroyed.

What Fruit Contains.

In general, fruits are valuable chiefly for the sugar, vitamines and acids which they contain. Fruit contains practically no fats and only minute quantities of protein, one-half to one per cent.

The carbohydrates of fruit are chiefly in the form of sugar, dextrin and acids and are ready for immediate absorption.

With a few exceptions, the sugar of fruits is dextrose and cellulose, generally in about equal parts, which is the form in which carbohydrates are utilized by the body ; hence they require no digestion. The absence of fat and the presence of minute quantities of protein and the fact that the sugar is generally in a form in which it can be immediately assimilated, show that fruits, of all foodstuffs, tax the digestive organs the least. The nutritive material which they contain is ready for immediate use, and this, perhaps, accounts for the almost immediate refreshing effect experienced by a fatigued person from the drinking of fruit juices, and explains the popularity of fruit juices of all sorts, especially in seasons of the year when the depressing effects of heat are most generally felt.

The Value of Strawberries.

The primary object of this article is to emphasize the valuable food properties of the "berried" or "soft" fruits, which include the following : gooseberries, wortleberries, blackberries, raspberries, elderberries, craneberries, mulberries, strawberries, logan-berries, currants and grapes.

The strawberry, which has its delicious aroma and its delicate sweet-acid flavour, is one of our choicest and most popular fruits. It is at the same time a highly useful and wholesome food. Its high water content reduces its nutritive value below that of most fruits, placing it on a footing with the orange, but it is unusually rich in lime and iron, not only as compared with other fruits but with most

other foodstuffs. Here are a few interesting comparisons.

The strawberry contains one-fourth grain of food lime to the ounce, which is more than any other fresh fruits, except fresh figs and raspberries. The strawberry presents higher proportion of lime notwithstanding its large water content, than any cereal food except oatmeal and entire wheat and rye. It affords, in equal weight, five times as much lime as does rice. This delicious fruit affords three times as much lime as does white of egg and four times as much as beef or chicken. The richness of the strawberry in iron is still more noteworthy. With the exception of the raspberry and fresh fig, the strawberry excels all other fresh fruits in richness in food iron. It contains four times as much iron as the orange. A pint of strawberries contains as much food iron as a pound loaf of white bread. It also contains more iron than an equal weight of beefsteak and its iron is of better quality.

Strawberries are richer in iron than most vegetables, being only excelled by beans and green peas. This fruit, when used freely, protects one against the loss of lime or iron and is invaluable as a source of organic bases which are needed to neutralize the acid wastes of the tissues.

Fruit Acids.

It has been demonstrated experimentally that foods contain various acids, the most important being citric, malic and tartaric acids. In "berries" in general, citric acid predominates and most "berries" contain, in addition, malic acid in small quantities. Tartaric acid has been found in strawberries, black currants and raspberries, but most of all it is the characteristic acid of grapes.

Many people have noticed the marked benefit from the use of acid fruits and the nature of the beneficial effect is that the acids stimulate the stomach to produce gastric juice, which is absolutely essential for good digestion, and second, that the acids of fruits are able, to some degree, to take the place of the natural acid of the stomach when this is absent. These facts emphasize the importance of fruits as an aid to digestion especially in cases of persons suffering from a deficiency of the hydrochloric acid of the gastric juice. One of the important functions of the acid of the gastric juice is to activate the pepsin and the acids of fruits have been proved to be to some extent capable of doing this. In such cases fruit of some sort should be taken at every meal.

The popular idea that the acids of fruits are unwholesome for persons suffering from gout and other uric acid disorders is a very mischievous error. Scientists have pointed out that fruit juices contain alkaline substances such as potash and soda which aid in the elimination of uric acid from the system. So that instead of being harmful, fruit juices are very excellent for one who needs to combat uric acid poisoning. Careful experiments have been made with fruit juices for the purpose of determining their ability to destroy disease germs, especially the germs of typhoid fever and cholera, and it has been demonstrated that citric acid and malic acid, even in weak solutions, are capable of killing germs in a few hours. It must be added, however, that it is not safe to trust to a few drops of fruit juice to render bad water safe. Such water must be boiled.

The acids and sugars of the "berried" fruits stimulate the intestines to activity without irritating them, so one would recommend the natural laxative properties of such fruits in place of laxative drugs which are without exception irritants, and when their use is long continued the common result is chronic infection and injury of the bowel.

Swallowing Seeds.

The question is sometimes asked: "Is it dangerous to swallow seeds of fruits, such as grape seeds, raspberry and other seedy fruits?" In the case of such small seeds no harm whatever is done and it is perhaps to some degree beneficial through increasing the bulk of the foods, because seeds consist chiefly of cellulose. Large seeds such as the grape, if taken in a considerable quantity, might prove burdensome to the bowel and on this account ought to be discarded. It should be mentioned, however, that the danger which many people apprehend from the entrance of seeds into the appendix is wholly imaginary. When found there it is purely accidental and not a cause of the disease but a sequence.

The skins and seeds of grapes have no nutritive value whatever and should be discarded.

Cleanliness Essential.

One word of warning is necessary in regard to this important article of diet. Fresh fruit should be disinfected before being eaten by being washed thoroughly in clean water, better still, with water to which peroxide of hydrogen has been added, one part to twenty of water.

India's Iron and Steel Industry.

By H. M. Surtees Tuckwell.*

That the art of smelting iron was understood in India many centuries ago is proved by the famous iron pillar at Delhi, which bears an inscription recording that it was erected in the year A.D. 319, and owing to the purity of the iron and to favourable atmospheric conditions is still in a state of excellent preservation. Evidences of primitive methods appear also to have existed during centuries long past in various parts in India, including the western coast, the Western Ghats, and Deccan, where small clay blast-furnaces are found, averaging about 2 ft. high and yielding from 5 to 6 lbs. of iron per charge. These employ charcoal as fuel, and are operated by blast supplied by goat-skin bellows worked by hand or foot. In Central India and the North-West Provinces the furnaces are larger and produce considerable quantities of wrought iron as well as of natural steel. As much as 120 lbs. of iron is made in a day of sixteen hours, while a third type of furnace yields 200 lbs. in sixteen hours, usually consisting of a mixture of malleable iron and natural steel, the relative amounts being largely dependent on the nature of the ore.

When the object is to produce steel, a large proportion of charcoal is employed and a gentle blast applied. Steel is made by the inhabitants of South India either by (*a*) the carburisation of wrought iron in crucibles, or (*b*) by the decarburisation of cast iron. The former alone is the true "wootz". It appears that these small blast-furnaces are fast disappearing, as while 510 were recorded as being in operation in 1909, they had fallen to 159 in 1919. The average annual production for the five years ending 1909 was 557 tons for Central Provinces; no later statistics are available.

In 1830 Mr. Joseph Marshall Heath established an iron and steel works on the Madras coast. His unsuccessful efforts have been described in many accounts of the early history of the industry. The second attempt by the Barakar Ironworks Company in 1875 also proved unsuccessful, but paved the way for the reconstruction of the undertaking by the Bengal Iron and Steel Company in 1889. In its early stages this Company lacked the practical support on the part of the Government which has facilitated later enterprises, and they decided to drop steel-making and specialise in foundry pig-iron and in the manufacture of cast iron pot sleepers and pipes, and mill columns. This business they have most successfully developed, and the works to-day employ 8,000 persons.

The Tata Iron and Steel Co.

The third attempt was that of the Tata Iron and Steel Company, formed in 1907, and the name of the founder, Mr. Jamsetji N. Tata, has been associated with the successful realisation of his project by the renaming by the Viceroy of the town and works "Jamshedpur". The first steel ingot was rolled on February 16, 1912, and rails were produced a month later. Mr. Tata had passed away on May 19, 1904. The coke-ovens and blast-furnace department gave satisfactory results from the first, and to some extent compensated for the anxiety and losses due to the disappointing results from the steelworks. Then the war broke out and added new sources of apprehension to the management. The open hearth department was then being operated by a German crew, and it was necessary to make immediate arrangement for the substitution of an English crew the Germans being interned at Ahmednagar.

During the early stages of the war plans were made for considerable extension. Two big American blast-furnaces of 500 tons daily capacity with their complement of coke-ovens, open hearth furnaces, blooming mills, rail mills, plate and sheet mills were ordered in the United States, this being due to purchases in Great Britain being vetoed by the Ministry of Munitions. These extensions are now practically completed, and the Tata Iron and Steel Company will have a productive capacity of 600,000 tons of pig-iron, and 750,000 tons of steel ingots per annum. There are about 36,000 employees at Jamshedpur, whilst the Company's collieries employ 4,500, the ore mines 8,000 and the limestone and dolomite quarries 4,000 making a grand total of 52,500, of whom only about 150 are Europeans or Americans. The works being situated in the middle of the jungle all the necessaries of life have to be provided. The Company now owns 4,500 houses, and the various towns have grown to such proportions that a municipality

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* Paper read before the Empire Mining and Metallurgical Congress.

has had to be established. The cost, to the Company to date, of the town and municipal services is about 1½ crores of rupees (£1,000,000). A technical institute has been established where there are at present 50 students undergoing a three years' course of training in metallurgy and allied subjects. The students on successfully completing their course, are offered employment with the Steel Company.

The following associated manufacturing concerns who will take the bulk of their raw material from the Tata Company have been established: (1) The Tinplate Company of India; (2) the Agricultural Implements Company; (3) the Calmoni Engineering Company for the production of textile machinery and miscellaneous castings; (4) the Indian Steel Wire Products, Limited; (5) the Enamelled Iron Ware Company. Most of these have reached the producing stage.

The Bengal Iron Company, Ltd.

These works were acquired by the present Company in 1889. The plant has been remodelled and a new modern blast-furnace added. The works are situated at Kulti, on the East Indian Railway, 142 miles irom Calcutta, and comprise blast-furnaces, iron foundries, engineering shops, collieries, coke-ovens, sulphuric acid and sulphate plants, and iron mines. There are now five blast-furnaces with an output capacity of 200,000 tons of pig-iron per annum, also four batteries of 34 Simon-Carves by-product ovens with a capacity of 250,000 tons of coke per annum. Parson-type turbo-blowers are installed, and steam is derived from 33 Lancashire boilers fired by waste gas from the blast-furnaces and coke-ovens. Two special brands of pig-iron are made (Manharpur and Bengal). A ready market for these is found in all the principal railways and iron foundries in India, and it is exported to Ceylon, Straits Settlements, Australia and New Zealand. All the ores consumed are drawn from the Company's properties in the districts of Burdwan and Singhbhum, the ore obtained from Manharpur carrying 64.9 per cent of iron. The Company also manufacture ferro-manganese. The collieries are situated in the Jherria and the Raneegunj fields. The present output is about 150,000 tons per annum. Electric coal-cutting, handling and pumping plant have recently been installed at Jherria. Eight thousand persons are employed in the ironworks, 2,000 in the collieries and 3,000 in the mines and quarries, a total of 13,000.

The Indian Iron and Steel Co.

This Company was floated under the managing agency of Burn and Company with a capital of Rs. 3 crores (£2,000,000), in March, 1918, for the purpose of manufacturing pig-iron by product coke, coal-tar products, sulphate of ammonia and sulphuric acid. The Company possesses its own iron, coal, and limestone mines within easy reach of the works, which are situated at Asansol, Bengal 132 miles north-west of Calcutta. The blast-furnace plant consists of two modern 350-ton furnaces, whose output can be increased to 500 tons capacity if required. Ladles of 75 tons capacity convey the hot metal to the double-strand pig machine or the sand-cast pig bed. All pig-iron is handled by magnets. Blast is supplied by two Parson high pressure turbo-blowers which derive their steam from 6 Babcock and Wilcox blast-furnace, gas-fired boilers. Coke is produced in two batteries of 80 Simon-Carves waste-heat coke ovens each, and there are installed a direct recovery by-products system, a sulphuric-acid plant, and a power plant equipped with Westinghouse turbo-alternators, the steam being obtained from a battery of 10 Babcock and Wilcox boilers arranged for firing with waste heat from the coke-ovens and with surplus gas. A foundry machine shop and blacksmith's shop are provided. Water is drawn from a river, a distance of 2½ miles and pumped to a large reservoir in the works, containing 300 million gallons. The whole of the plant is in full operation, and a ready market is being found for the Company's product.

The United Steel Corporation.

The United Steel Corporation of Asia was formed by Messrs. Bird and Company, of Calcutta and Messrs. Cammel Laird and Company, Limited. It is the intention of the Corporation to produce rails, joists, channels, angles and other sections which may be required from the largest to the smallest of British standard sections: plate of sizes and thickness suitable for the manufacture of ships, locomotives, wagons, etc., plain and corrugated sheets, black or galvanized; and to roll the heavier classes of wire, wire rods, etc. The works are to have a capacity of 250,000 tons of rolled material per annum at the outset but will be so designed that they can be expanded to produce 500,000 tons per annum. The installation will comprise blast-furnaces, coke-ovens, open-hearth furnaces and rolling mills, with the electric power, plant and all

other auxiliary machinery incidental to such a plant. It is understood that the scheme will be put into operation as soon as the necessary capital is forthcoming.

Mysore Iron Works.

Of special interest is the charcoal blast-furnace and wood-distillation plant of the Mysore Government Iron Works on the metre-gauge Mysore Railway at Bhadravati (see Review April 13, 1923). The works were opened by the Dewan on January 18, 1923, and have been working successfully since. Fuel is obtained from the State forests, which have an area of 350 square miles, and lie from 10 to 25 miles from Bhadravati. They are reached by a 2-feet gauge tramway system constructed for this purpose. Twelve retorts are installed with a total capacity of 240 tons of wood per day. A distillation plant produces methyl alcohol, calcium acetate and wood tar. There is a charcoal blast-furnace with electrically operated skip hoist automatic charging with a daily output of 60 tons, or an annual output of about 22,000 tons of pig-iron. The ore supply is principally from deposits at Kemmangundi, 25 miles south of Bhadravati, and another source is at Chattanhalli, 41 miles beyond. These are the principal known deposits of ore in Mysore. The ore lies about 4,500 feet above sea-level and is estimated at 4,000,000 tons which at present consumption (30,000) will last the furnace for 130 years. Dolomite is used as flux, and is obtained from Shankargudda, 27 miles from the plant. The iron is sand-cast and graded 1 to 5. A Scotch grade is also produced, with over 2 per cent silicon, with phosphorus from 4.10 to 0.17, manganese 0.40 to 1.75, and sulphur from a trace to 0.02 per cent.

Present Position.

Immediately after the war a widespread tendency to inaugurate fresh industries was witnessed, new companies were registered right and left and for a few months a financial boom dominated India. A serious reaction followed, many of the companies failed, and a period of depression and monetary shortage set in. At the present time there are small signs of improvement, but the check to industrial development has imposed a serious burden upon existing undertakings. Wages, which rose rapidly in India, have remained at the highest or nearly the highest level attained. An increased general revenue tariff has added to the cost of imported stores and raw materials while depreciated exchanges have enabled Continental manufacturers to dump their goods into India at a cost lower than that at which local manufacturers can produce. Admittedly British manufacturers of steel quote, for India, prices which are manifestly considerably under cost of manufacture. It is obvious that under present conditions Indian steel producers have no foreign market for their goods and must meet serious competition in supplying local demands.

These amounted to only 1,220,633 tons of manufactured iron and steel in 1914 to 474,123 tons in 1920, to 781,505 tons in 1921, and 721,065 tons in 1922.

Industrial progress has been on a limited scale and slow in comparison with other countries. The Indian Industrial Commission in their report stated: "The industrial system is unevenly and in most cases inadequately developed and the capitalists of the country with a few noble exceptions have till now left to other nations the work and the profit of manufacturing her valuable raw materials or have allowed them to remain unutilized. . . . It is probable, however, that the development of industries will attract a certain amount of money now lying idle and there is the possibility of attracting foreign capital."

Manganese.

There is ample manganese in India for the requirements of a very large steel industry, and from 500,000 to 800,000 tons, are exported annually. The principal source is near Nagpur, other deposits are at Gangpur, along the Eastern Ghats and in Mysore State. Indian ores contain less moisture than those of other countries: they stand first as regards manganese contents with Brazil a close second. As regards silica, Brazil stands first, with India second. As regards phosphorus, India stands last but one; those of Russia only containing more. The Indian ores contain much less iron than the manganiferous iron ores of other countries, but of the true manganese ores they contain the highest amounts of iron, in spite of the fact that they contain also the highest amount of manganese and it depends on the uses to which they are put whether this is or is not an advantage. The growth of the Indian manganese industry has of late years been very rapid. For some years the three leading producers of the world have been Brazil, India and Russia. The war led to almost a cessation of the Russian industry, and to a moderate contraction of that of India (owing to freight difficulties), with a resultant great expansion in production

of magnanese ore in Brazil and the United States.

Firebricks from clays in the Jherria coalfield are quite satisfactory, and the Tata Company have entirely lined their two large blast-furnaces with Indian firebricks. The occurrences of magnesite are not large and have the disadvantage of being too pure to frit. This mineral occurs chiefly in S. India, in the Salem district. Great impetus was given to production during the war when Styrian supplies failed. The Tata Company have small supplies in Mysore. There are also supplies known in the Trichinopoly district. The output in Salem in 1922 was 18,417 tons and in Mysore 856 tons.

Future Prospects.

India has immense possibilities. Owing to the demand during the war for steel a serious inroad was made upon the deposits of high-grade ores in all parts of the world. At the same time great impetus was given to prospecting in India, with the result that while many countries so far as accessible ores are concerned are being forced to use lower-grade materials, India has practically untouched fields of richest iron ore. In India, where coal and iron ore are comparatively near each other opportunity exists to make iron on the spot or to export the ore. Thus, with abundance of iron ore of highest grade, cheap fuel and labour, low railway freights, geographical convenience from the point of market, and comparative freedom from the after effects of the war, India is sure to become ere long one of the greatest manufacturers of iron and steel provided necessary and adequate facilities are granted against unfair competition.

In conclusion, the author quotes the recommendation of the Fiscal Commission who remark: "We have considered generally the advantages and the possible disadvantages which would attach to a considerable development of Indian industries. We have no hesitation in holding that such a development would be very much to the advantage of the country as a whole, creating new sources of wealth, encouraging the accumulation of capital, enlarging the public revenue, providing more profitable employment for labour, reducing the excessive dependence of the country on the unstable profits of agriculture, and finally stimulating the national life and developing the national character."

As the result of an elaborate series of experiments carried out under the aegis of the Bengal Agricultural Department it has been proved that the water hyacinth, hitherto regarded as a scourge, is valuable as a manure after de-composition. The ashes procured from the plant after burning are reported to be rich in nitrogen and potash. Mr. R. S. Finlow, in a note just issued by the Bengal Agricultural Department says: "The rotted water hyacinth is just as valuable on silt soils. Rotted hyacinth is best prepared by allowing the fresh green plants to dry for about 2 days in the sun, and then piling in a heap. In this way decomposition takes place quickly. Hyacinth ash is prepared by drying the plants in the sun and burning in a hole to prevent loss of the ash. When there is a lack of other fuel, dried hyacinth is of great use in the boiling of sugarcane or date juice. In this case the heat of the burning plant is utilized and the ash remains as a valuable residue." This is indeed welcome news for agriculturists especially in view of the vast sums of money spent in various parts of India to rid rivers and water-ways of this obnoxious pest. To be able to utilize a waste product is an achievement worthy of the highest praise.

In a recent letter to the *Times of India* a correspondent states that he now knows the reason why some bank managers in Bombay, taking advantage of the change of premises, have allotted to themselves larger rooms than they used to occupy before. They are only following the new vogue among bank managers for large rooms with long, cold vistas, which is having marked success in the stern object for which it was designed—the refusal of overdrafts. The small cramped, friendly sanctums in which the old-fashioned manager saw his client must have been a positive peril to the banking business. The raiser of the wind found himself knee to knee with his opponent. In this deadly intimacy he could force cigars on his banker, tell stories, pick up photographs from the great man's desk, comment on the family likeness of a charming daughter, ascertain the other fellow's golf handicap, draw a reticent picture of impending bailiffs, and walk out successfully, leaving the banker weakly waggling his hands. Things have changed since those good old days. And the slump, moreover, is still here. Banks recall in a slump what they have lent in a boom.

Co-operation in Bombay.

By Prof. H. L. Kaji,

President, Central Co-operative Institute, Bombay Branch.*

It is my proud privilege to-day to welcome you all, brother co-operators, to this Conference. Two years and a half back, the city co-operators met in Conference to consider civic problems soon after the Bombay Branch of the Central Co-operative Institute came into existence. During this interval, the Central Co-operative Institute has by its work and activities established its position more firmly as the non-official organ of co-operative thought in the Presidency and extended its wholesome influence in different parts of the Presidency by starting District and Taluka Branches to carry the message of Co-operation to the masses. The Bombay City Branch, during this interval, has got into its strides, and has done useful work in the city and suburbs of Bombay. Its influence has been felt in propaganda and education and the societies have been increasingly recognizing its importance and usefulness and turning to it for advice and assistance. Realizing that intensive work in the City required more centres of work and that different areas in the city required different types of co-operative effort, the Bombay Branch has established two sub-branches, one in Parel, to devote itself to the industrial population and its problems, and the other in the Fort, where the lower middle class, employed in various offices and firms, present very different problems indeed. The problems of the residential areas of the middle classes in Girgaum and Kalbadevi require different treatment, the basis of brotherhood being largely the community or the locality, unlike the common occupational ties of the Fort and Parel areas. The Mandvi and Mazgaon areas have still other features; the suburbs, still others. But further sub-branching would mean additional expenditure and till the financial situation improves through donations, grants or subscriptions, it will not be possible to go further in this direction. There is a feeling among the societies, particularly the big ones, that the Institute and its Branches are something like extraneous bodies imposed upon them, instead of being representative bodies created by them. They seek naturally representation on their Boards and Standing Committees and seem desirous of securing a voice in them. This to me is a very encouraging recognition of the growing influence and importance of the Institute by the Societies. The constitution of the Institute and its Branches is being revised and I expect that ere long the revised constitution will make the Institute approximate largely to an ideal federation of the Co-operative Movement in the Presidency, representative of its individual and society members and representative also of official opinion by suitable nominations of Departmental Officers in the District, Divisional and Central executives.

Since the last Conference, there were held in the city of Bombay, the Provincial Conference, the Co-operative Products Exhibition, and the Parel Co-operative Conference towards the end of 1922. Last year, there were a series of smaller conferences, of different types of societies, the Producers', the Millhands', the Chawl, the Depressed Classes', the Educational and the Salary-earners'; and now this year, we have the Third City Conference. It is with great pleasure that I welcome you all to this Conference and hope that under able guidance, your deliberations will prove fruitful in various directions.

In the City, we have 218 co-operative societies in all, with a membership of over 50,000 persons. Some of these 50,000 persons must have been, however, counted twice, thrice and in some cases four times over, as members of more than one society. The number of members thus cannot be taken at more than 25,000. Taking the average number of persons in a family at 5, the population served by the Co-operative Movement in Bombay City works out at about 125,000, about 10% of the total population of the City. This proportion, it will be recognized, is not at all satisfactory. It is true that the staunchest exponents of co-operation cannot expect all the inhabitants of a city to be members of one co-operative society or the other. The upper classes have little need and the lowest classes are too illiterate and too involved to benefit by co-operation; charity and philanthropy must in their case precede effective co-operative aid. But even when we make allowance for these two extremes of society, 10% is obviously

* Speech delivered before the Third Bombay Co-operative Conference.

not a satisfactory proportion. The little satisfaction, however, that we may derive even from this 10% largely vanishes when we realize that the two big societies of railway employees account for about 22,000 members and the Postal Society for another 2,000, making between them about half the total membership in Bombay. Excluding these three big organizations of a special character, the percentage of population served by the Co-operative Movement will be found to be about 5. It is evident, therefore, that co-operative propaganda has yet much to do before we can feel satisfied, even for the time being.

A prominent feature of Bombay co-operation, in common with rural areas, is the great predominance of credit co-operation over other forms of co-operative effort. More than 170 out of 218 societies are urban banks and credit societies. The Co-operative Movement is intended, we all know, to meet the common economic needs of groups of persons, in such a way that by the elimination,as far as may be, of that wasteful agency of unnecessary profit-takers, the middlemen, the needs are met better and more economically. Is credit then the only need of Bombay? As consumers, the primary needs of the people are food, shelter and clothing; and the greatest service that co-operation should and could render is to supply these necessaries cheaply and well. Housing societies and co-operative stores, grain stores, cloth stores and sundries stores, ought to be the natural form that the Co-operative Movement should take in a large city like Bombay, and yet, we have only 19 such store societies, most of these being further in a more or less moribund condition, and only 20 Housing Societies, more or less marking time and largely tinkering with the Housing problem in Bombay. As producers, the needs of the people would be the purchase of raw materials in the most economical way, and the sale of finished goods in the most profitable way; and yet we can boast of only 5 producers' societies. It seems, instead of preferring to meet their needs in common by organized co-operative effort, the people have preferred to meet their needs individually. The consumer makes his own purchases from wherever he likes and the producer produces his goods as and how he pleases. There is no co-operative co-ordination of effort visible. The people have not learned that working together would be immensely beneficial. The producer however for his purpose is short of cash; he needs that great agent of production, capital and while remaining an individual producer would be naturally expected to feel the need for a co-operative credit society, which would supply him with this much needed capital, on the security, not of moveable or immoveable properties which he does not possess, but on the security of character vouched for by a couple of friends. But unfortunately, even this type of credit society where loans are meant for being turned to productive uses, is conspicuous by its absence. The consumer for his ordinary purchases may or may not be short of cash; but he is generally always in need of money for special occasions, such as marriages, illnesses and funerals; and he has appreciated the facility of a credit society which would grant him the accommodation required, the repayment of which, he perhaps hopes to evade or put off in a number of ways. Most of the credit societies that we have in Bombay are of this type, granting loans for consumption not for production, for non-productive, not for productive purposes. The amount of loans, these societies grant are generally too small to be useful for trading or business purposes and must be taken whatever purpose may have been entered in the societies' books, to be meant for non-productive uses. The organization of such societies is easy enough; their working, not difficult; only overdues, that great disfigurement of the Co-operative Movement, that ugly symbol of the non-development of the co-operative character, are a necessary corollary.

To do away with this menace of overdues, it appears to me that the basis of sanctioning loans to members by these credit societies must be altered. The amount of loans admissible to members is naturally rightly regulated by the capacity to repay. But the correlating of this capacity to repay with the number of shares held or the salary earned in an employees' society is not quite sound. The true index of this capacity is apparently the capacity to save, an indication of which is obtained from his savings in the past. As a member cannot, however, be expected to deposit all his savings in the society, his deposit account in the society will not represent all his savings but still it would give some measure of his ability to save. Making allowance for increased savings under the stress of the peculiar circumstances necessitating a loan, the regularity and the amount of monthly deposits by a member should give a very fair idea of what he could save in order to repay the loan and thus give a very fair idea of the amount

of loan which could be safely granted to him. Thus it would be absurd to judge empirically that a man drawing Rs. 250 per mensem would be able to pay instalments of Rs. 50 or even Rs. 25 unless he regularly deposited with the society in the past, say Rs. 20 or Rs. 10 monthly. Such a system of correlating the amount of loans with regularity and amount of deposits would be, I fancy, of incalculable benefit to the urban co-operative credit movement. The class of loan hunting members, who become members with the express object of getting a loan, will evaporate; overdues will become a rare phenomenon; and the habit of saving, of thrift, would be inculcated among the members; and thrift is the bedrock of really all forms of co-operative activities. Co-operation, without thrift, is illusory and fails of its purpose.

On this basis of thrift then, we welcome the continuation and extension of communal and samaj societies, railways and employees' societies, locality and chawl societies, and the millhands and depressed class societies. The Depressed Class Societies under the Debt Redemption Scheme, with unlimited liability, have failed and they are, as the Registrar remarked in his report, more a warning than an example. Hopeless cases have to be treated by charity and philanthropy; co-operation should then come in to prevent further or future backsliding in the morass of heavy indebtedness. The sooner these societies are re-organized therefore, the better. The problems of the Depressed Classes require careful consideration and I have no doubt that our Parel Sub-Branch will devote themselves to them, and will be able to give effective assistance in their solution. But, for the class of merchants and petty traders, who require loans for business purposes, should not co-operation do something? Business is not a matter for communities or employers to tackle, and I feel that, Bombay must now take in hand the organization of what are called Peoples' Banks in various localities, which, irrespective of caste, creed or occupation, would receive deposits and sanction loans for business purposes. The joint stock banks are there no doubt; but the facilities of a co-operative bank, of getting loans on personal security are not there. The Provincial Co-operative Bank is in our midst,but its service is generally restricted to societies; individuals are outside its scope. Peoples' Banks in the different wards of the City seem to be urgently wanted as the next step in the evolution of urban co-operative banking.

Other types of credit societies, that seem to me to be very necessary in Bombay particularly, are Provident Fund and Thrift societies. Men with large incomes save almost automatically; they cannot but save; men with moderate incomes can save, but may or may not; men with small incomes cannot save except under compulsion. Money saved is money gained—that is the fundamental creed of co-operation, and co-operative societies for compulsory, non-attachable savings, are doubtless worthy of all encouragement. It is, however, a very common, though a very regrettable, phenomenon that men with even decent incomes leave their wives in want and penury and their children unprovided for. Insurance is therefore a duty; but as it means a loss of interest on the premia, a system must be devised and societies started, whereby the benefits of insurance in the event of early death and the benefits of compulsory, non-withdrawable, non-attachable savings may be combined and secure the family of the salary-earner of small means. Thrift societies have come into existence; provident funds are being started, and large employers may well take the lead in organizing such societies for their employees. But, Co-operative Insurance has apparently received but scant attention hitherto. I trust, Bombay Co-operators will tackle this problem seriously and that before we next meet in conference, we shall have a Co-operative Insurance and Thrift Society.

Turning now to the non-credit types of societies in Bombay, the most important in point of membership and working capital are the Housing Societies. The housing problem is very acute in Bombay, the increasing population of this vast and growing city demands a supply of tenements, which is not forthcoming adequately. The rents have mounted up and make a large hole in the tenant's thin purses. Taking the average rents of tenements in the residential areas of Bombay South for the lower middle class it has been found that the rent paid comes to a little over 18% of the income earned. When, however, we consider, not older buildings, but the newer buildings only, we find this percentage to be 30. 18% was high; but 30% is appalling. It would appear, therefore, obvious that serious efforts should be made to encourage house building by all possible means in the city and suburbs of Bombay. To this end, life in the suburbs should be made attractive and safe enough by efficient

police protection, by cheap and speedy local train services and by greater encouragement to Co-operative Housing Societies. The Government have lowered the rate of interest charged on long term loans to these societies from 6% to 5%; but still I understand, the lower rate is not the maximum but rather the minimum, loans having been sanctioned at 6% but lately. This is not as it ought to be. It would be well if 5% were to be made the maximum rate charged, a lower rate being granted, under special circumstances. Further, societies are heard to complain now and then that in practice the rate of interest works out at more than 5 or 6%, no allowance being made for the interest due on the repaid capital. If house building is to be encouraged actively, I feel, the Government must be more liberal and must be prepared even to suffer loss by charging a lower rate of interest than 5%.

Apart from this question of the rate of interest, there are many vexatious delays, which greatly come in the way of the success of these societies. Housing troubles and the prospect of assistance by Government in the matter of capital for construction of houses draw together men quickly enough; but delays in securing the plots, delays in approving of plans, delays in construction of the necessary roads and approaches to the plots, delays of various kinds damp the enthusiasm of the would-be tenants and jeopardise the success of the societies.

Let us look at the Housing Societies from another point of view. There are 20 societies with a working capital of about 33.5 lakhs of rupees, and a membership of more than 6000. These figures look, if not quite imposing, at least fair enough. But, to my mind, the test of success of a Housing Society is not the working capital or the share capital, not the membership, but the number of tenants it gives shelter to, the population which it frees from housing troubles once for all. Unfortunately, these figures, I have not been able to get; but I understand out of these 20 societies, only five or six have buildings ready for occupation. The curious feature further is that these buildings are not yet tenanted fully. One would naturally expect a rush of applicants; but there is no such rush. The difficulties of suburban life, where these buildings have been erected are a deterrent no doubt; but I wonder whether the rents are low enough from the tenant's point of view to induce him to brave these difficulties. Co-operative Housing, I am afraid, has not so far made any substantial contribution towards relieving congestion in the city.

The Stores societies present to us a tale of failure, almost unmitigated failure. Most of the nineteen societies are past even struggles for existence and may be regarded as awaiting cancellation. With a share capital of about Rs. 25,000 and a working capital of about Rs. 54,000, they made a loss of Rs. 295 in 1922—23. This shows that, collectively speaking, these societies cannot command deposits and short-term loans sufficient to carry on large scale business with smaller share capital. There is not enough confidence apparently, among the members, in the Stores Movement and the common shop. Started under the spur of the days of control, the societies were an effort at meeting a temporary hardship and not the outcome of a desire on the part of consumers of small means to have their own shop for their daily requirements of aliments, condiments or cloth. Naturally, therefore, the hardships of the 'control' regime over the societies collapsed and did not command the loyalty of their members. It is not necessary here to enter into an analysis of the causes of the failure of the Stores Movement in the city. But one thing strikes me; and it is this. With a working capital of Rs. 54,000, the stores societies spent about Rs. 19,000 on management in 1922—1923, that is about 35% while the cost of management in credit societies came to 5% and in Housing Societies to 18%. One would naturally feel that the stores societies were improvident and extravagant and spent far too much on the establishment and rent. But I think about it differently. The same establishment would have been able to carry on a far larger amount of business and the moral of this should be, not to cut down your cost of management but rather to increase the working capital and the turnover so that the proportion of the cost of management to the working capital may be smaller, and the societies may prosper. What I have been feeling about stores societies is this, that either we should carry on business on a large scale with a competent and well-paid staff or we should have societies small enough to be managed by honorary workers only. A middling society must have a staff and that staff is bound to be not very efficient and still disproportionately paid.

Glancing at the nature of these 19 societies, we find that the B. B. & C. I. Railway Employees' Co-operative Stores at Dadar is

doing well; the Shivchhatrapati Stores at Lal Bagh is doing well; the two co-operative Hostels of the South Indians are getting on and the two College Stores are thriving. These successes have lessons to teach. The first society sells goods on credit, which is in the nature of deferred cash payment, since the purchaser presents a credit card issued by the Head of his department in the Railway and the amount due is recovered every month from his pay. This system is popular and deserves to be adopted much more widely. Of course, one of the main reasons for the success of this society is the concession granted by the Railway authorities in the freight for importing commodities from up-country stations; but the moral is that even with these obvious advantages, the society has to adopt the system of credit sales safeguarded as above. The other society proves that even when members are not loyal, the society will succeed, not as a genuine co-operative society but as a business concern, like any other shop in the neighbourhood, when some one or two persons have sufficient interest or stake in the society to make it their own business as it were. The Hostels prove that apart from grain and cloth stores, consumers' co-operation can be successfully applied to meet a genuine need. In such cases, it is not so much an economic grievance that co-operation seeks to redress as facilities that it attempts to secure. The College Stores prove much the same thing. They give facility, economic advantage and help in the building up of character—no small advantages. Discarding the idea of a big store which may be the nucleus of a C. W. S. for Bombay for the time being, I think it would be well if Bombay co-operators concentrated efforts to start consumers' societies to meet special needs, not so much from the economic standpoint as from that of facilities. For instance, there is no good Hindu Hotel where a man may get wholesome food and escape the horrors of a Lodge or an Ashram. There is no Hindu restaurant where the clerical staff of various offices and firms in Fort may get wholesome refreshments. There is no Co-operative Hostel for students though it is well known that Hostel accommodation for students is quite inadequate. There is no Co-operative Laundry which in essence would mean a very simple thing—engaging the services of a Dhobie for a chawl or two. I would urge you, gentlemen, to think of your special needs and you will find plenty of directions in which a little co-operation will give you facilities and some little economic advantage also.

Producers' Societies number only 5 and their transactions in 1922—23 resulted in a loss of Rs. 286. The cost of management exceeded the share capital and was 58% of the working capital. The same lesson may be drawn for these societies from these figures as in the case of the stores. They are too small. They produce on a small scale and cannot undertake large orders. While this is true generally, an examination of the societies reveals that the Twasta Kasar Society is being worked economically and efficiently, but the Foundry suffers from lack of patronage. The organization of the small producer is very desirable but I am afraid a great deal of propaganda and education must precede before they understand the benefits of co-operative organization.

Co-operation will not achieve miracles; but if well directed, co-operation lightens burdens and removes difficulties. To be successful however, it has to be preceded by intensive propaganda, training and education. The Central Co-operative Institute has undertaken this task of preparing the ground whereon the co-operative seed can be sown with the hopes of reaping a bountiful harvest. It is gratifying that Government appreciate the part the Institute plays and help it financially with a decent grant. But the Institute has work enough in all parts of the Presidency and the Bombay Branch can, therefore, only expect a slice out of that grant besides the subscriptions of its members. Without more funds, our activities are handicapped seriously and we cannot take the message of co-operation to the toiling mill-hand, to the depressed class sweeper, to the struggling small producer, to the exploited artisan or to the hard pressed middle class as effectively as we wish. It is often said that no good cause suffers in Bombay for lack of funds and surely co-operation is a good cause. All those who have the good of Bombay at heart should think seriously whether they are contributing with work or money as they ought to in the furtherance of the gospel of this mass-lifting movement. I appeal to the Bombay Municipal Corporation to make a grant to the Bombay Branch of the Central Co-operative Institute for co-operative propaganda and education. I appeal to all organized charities to include us when they dole out their grants to various institutions. I appeal to the Mill Owners and other large employers of labour to assist us.

Chemical Research in India.

By Prof. Jocelyn F. Thorpe, F.R.S.*

The Indian Industrial Commission, presided over by Sir Thomas Holland, issued its report in 1918. It had been formed in 1916, and was "instructed to examine and report upon the possibilities of further industrial development in India, and to submit its recommendations" with special reference to a number of specific questions of which two only concern us here. These were "*b*. to ascertain whether and if so in what manner, Government can usefully give direct encouragement to industrial development.—

i. By rendering technical advice more freely available.

ii. By the demonstration of the practical possibility on the commercial scale of particular industries."

The Commission made a number of recommendations dealing with the various items of its merit. It recommended, for example, the formation of several scientific services built up on lines which, it was hoped, would give an impetus to the development of industries based on the great natural resources of the country.

Among the services the formation of which was recommended was one dealing with chemistry, and as this subject was rightly regarded as one of the foundations of all industrial development, the first effect given to the report of the Commission was to appoint a committee with instructions "to formulate proposals for the organization of a Chemical Service for India and for the location and equipment of research laboratories". I was asked to act as chairman of this committee, and with the object of obtaining an insight into the actual conditions, I toured through India during November and December of 1919 and January and February of 1920. In the course of the tour I visited all the important centres and was able to discuss the problems involved with man, prominent officials and business men, I say, all the leading educational institutions and noted the facilities for research present in the chemical department attached to them.

My conclusion was that India is at present poorly equipped to meet any demand for properly trained chemists, and cannot be expected to supply recruits for a chemical service unless the service itself can act as the research trainer. Nevertheless, the picture is not entirely dark, as it is possible that the Indian Institute of Science at Bangalore may, under the new regime, revert to its original purpose—the encouragement of post-graduate research in pure physical science—and become the centre of research training in India.

Industrial Commission's Scheme.

The scheme suggested by the Industrial Commission was a comprehensive one, and well fitted to meet the immediate industrial requirements of the country. It provided for the establishment of a central Government research institute at which both fundamental and practical research would be carried out, to serve as a nucleus from which chemists could be drawn to fill the various chemical posts throughout the Empire.

It was evident to me during the course of tour, however, that the provinces would have nothing to do with such a scheme. Each and all of them were keenly alive to the needs of the times. They recognized the necessity for scientific investigation into the conditions underlying their existing industries and were fully aware that many of their natural resources remained undeveloped and could only be developed through the agency of scientific research, but they wished to do these things on their own behalf, unhampered by any restrictions which might be exercised by a central Government institution such as that suggested by the Industrial Commission.

Still, a modified scheme by which each province would have its own research institute seemed practicable and, indeed, even an improvement on the original idea, provided that each provincial institute undertook to confine its activities, both fundamental and practical, to its own local immediate industrial needs, leaving a central institute under the Government to carry out these fundamental researches which underlay the industries of the countries as a whole. A modified and extended scheme of this kind was recommended in the report of my Committee. In practice the provincial institutes would carry out reaearch work on questions submitted to them by manufacturers in the province, and would also carry out research work on new industries, likely, owing to the presence of

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* With acknowledgments to *Nature*,

the raw material in the province or for other reasons, to be effectively established there.

In England, two very strong and reasonable objections would be at once raised to such a scheme. The first would be that the proposed organization would take away the livelihood of a number of useful consulting chemists, the second that it would provide the manufacturer with an excuse for not doing what, in his own interests, he ought to do, namely, to establish and maintain a research laboratory of his own. But England is not India, and the conditions which are present in one country are absent in the other. There are very few consulting chemists in India, most of the consulting advisory work, where such exists, being carried out in the Universities. The second objection also would not apply to Indian conditions. Indeed, the successful working of the proposed organization would, in all probability, lead to an effect precisely opposite in character. The chemist or chemists who had solved problems in the research institute submitted by a manufacturer would be loaned to the manufacturer for a sufficient period of time to enable him to place the new process on a working basis in the factory. The general effect would thus be to establish a research laboratory in the factory or to augment it if one already existed.

In the central Government institute, organized research of a fundamental character would be carried out. Much of this would arise during the operations conducted at the provincial institutes and would be referred by them to the central research institute; such reference would, however, only be made when the problem was either of general interest to the whole Empire, or, while fundamental in character, did not give promise of sufficiently early practical results to warrant the provincial institute in attacking it. The decision on this point would rest with the provincial institute. It would be one of the chief duties of the central Government institute to survey the industrial possibilities of the Empire generally, and to initiate research having for its object the establishment of new industries in different parts of the country.

It will be seen, therefore, that the scheme suggested provided for the establishment of two very similar types of institution. One type, situated in each of the most suitable provincial centres, would be essentially practical in outlook. The other, situated at some convenient central place—the recommendation of Dehra Dun for this purpose by the Industrial Commission was endorsed by my Committee—would conduct research mainly fundamental in character, but would, nevertheless, deal in certain cases with investigations involving the practical establishment of a new industry.

One of the main advantages of this arrangement would be that the personnel could, to a certain extent, be interchangeable, a most desirable feature when it is remembered that each institution must necessarily act as a training centre for the personnel it employs. No university or technological system of training can be expected to discriminate between the men who are best fitted to act as leaders of research and those who are suited by natural characteristics and temperament to be leaders in the conduct of works practice. It is essential, where chemical manufacturers are concerned, that each type of man should have received the same grounding, and this is adequately effected by a system involving a course of instruction up to the honours graduation stage, followed by a training in research methods, the latter serving to impart the feeling of self-reliance and patience essential to success in a chemical worker, which cannot be obtained otherwise.

It is the final problem, that is, how to supply the training in works practice, and what is still more important, how to pick out the men most suited by temperament to profit by this training, which has to be solved not only in India but in Great Britain also. In the proposed chemical service this very real problem of type would be met by a frequent interchange between the individuals comprising the junior personnel of the research staffs of the various institutes. Each man would, therefore, obtain his training in works practice, and I am convinced that such training would serve as a method by which the men could be separated into two distinct classes, namely, those having a practical bias, and those whose instincts led them to take up work of a more fundamental character in the laboratory.

Each provincial institute, as well as the central Government institute, would, therefore, be provided with a main general research laboratory equipped in the usual manner, a semi-large scale laboratory provided with small scale plant suitable for making material on, say, the 10lb. scale, and another laboratory where the "unit" scale plant could be erected. It is probable that the two latter types could be combined into one laboratory. All that is required is an open floor space on which

plant can be built up and pulled to pieces at will; it would have to be provided with the usual services of gas, water, etc. These proposals imply that, besides the main chemical staff, each institute would have to be provided with a suitable staff of engineers, whose main duty would be to act as instructors in general engineering practice.

Question of Cost.

The proposed scheme for the establishment of a chemical service would have to start in a small way, and, no doubt, in many of the provinces use could be made of some existing institute to act as the provincial research institute, until funds were available for the erection and equipment of a building especially designed for the purpose. The chief initial cost would be incurred by the erection and equipment of the new Government Research Institute at Dehra Dun, but it is understood that some of the money, at any rate, has been allotted for this purpose. Indeed, it is likely that a large capital expenditure and a considerable income would be necessary in order to start the scheme and to place it initially on a sure financial basis, because it is not proposed that any attempt should be made to make the service self-supporting and the equipment of the new laboratories would have to be completely up-to-date. If the Service is to succeed, the Government must take the long view, and bear in mind, chiefly, the increase in wealth to be obtained by the development of the natural resources of the country. The opportunity is a splendid one, but to take advantage of it effectively requires courage and vision.

The Cinema in Schools.

During the meetings of the Imperial Education Conference, held in London last year, a resolution was passed asking Lord Gorell to organize a committee, in consultation with the public education authorities and with representatives of the teaching profession and the cinema industry, to explore the possibilities of using the cinematograph in the service of education—especially through the routine work of the class-room. This committee has now drawn up its report, which is soon to be published as a supplement to the report of the Imperial Education Conference. It deals thoroughly with the possibility of using the firm as an aid to education, and it is stated that, on the information before it, the committee is strongly of opinion that a sound *prima facie* case has been established in support of the view that the cinematograph can be of real value as an adjunct to present educational methods—especially in the teaching of nature study, geography, and science, and that it should accordingly be recognized as part of the normal equipment of educational institutions.

The committee urges that, if the potentialities of the cinematograph as an adjunct to existing methods of instruction are to be truly gauged, it is essential that films should be produced in accordance with the requirements of the teaching profession to illustrate the actual lessons that are being taught in school. The committee accordingly recommends that, in the interests of the Empire as a whole, the inquiry should now be taken up by the British Board of Education and further experiments conducted on the lines suggested. If, as evidence already before them tends to show, the essay that follow a cinematograph demonstration with films expressly devised for instructional purposes are characterized by greater fullness, clarity and exactness than those which follow ordinary class-room lessons, or if by this means children are moved to greater individual efforts or to more abiding interest, then the case for the cinematograph would seem to be made clear.

During its sittings the committee collected a considerable amount of evidence as to the use at present made of the cinematograph in education, and opinions were also obtained as to its practical educational value. The evidence so collected, while admittedly not exhaustive, clearly indicates that already more use is being made of the cinematograph in education than has generally been known, although the whole matter is still in an experimental stage. With the exception of Northamptonshire, local education authorities have, it is declared, in the past done little or nothing in the way of supplying or contributing to the cost of projectors and films for use in school, and in the great majority of cases in which the cinematograph has been installed in schools, the fact has been due to the initiative and enthusiasm of individual teachers.

Sericulture in Mysore, 1923-24.

The record of the Mysore Sericultural department during the year 1923—24 was one of steady and satisfactory progress. Despite the unfavourable seasonal conditions due to insufficient rainfall, the department was able to expand its activities. A beginning was made in several new places in Hassan, Mysore, Chitaldrug, Tumkur, Kolar and Bangalore Districts. The agricultural population are apparently beginning to realize the advantages of mulberry cultivation in seasons of drought and the larger profits which it yields as compared with ordinary kinds of cultivation. The area under the mulberry crop, in the old as well as new areas, is reported to have increased by more than 2,000 acres. The staff of the Department helped at every stage of the operations and withdrew only after two or three successful rearings. Although there was no regular school course, facilities were afforded at the headquarter stations for training students, and they were availed of to a large extent not only by people of the State, but also by the neighbouring administrations of Coorg and Hyderabad. In view of the importance of the industry, Government have already given it specific representation in the Representative Assembly and in the Economic Conference.

The grainages at Mysore, Kolar, Kunigal and Channapatna supplied 2,40,901 layings and the aided rearers at Bidadi and Kempanahalli, 70 lakhs of seed cocoons. Though new races could not be introduced on a large scale owing to unsuitable conditions, the results of their rearing on the farm and with the selected rearers confirmed their relative superiority. Demonstrations were as usual organized in connection with jatras and fairs. With a view to improve domestic reeling, a unit was imported from Lyons and sent round for demonstration at selected places. In the light of criticisms offered by the rearers who took a keen interest in the working of the unit and as a result of departmental study, an improved type of domestic basin has been designed and this has to be tested after a working model is constructed. The proposals for improving indigenous reeling and decentralization of work in the Filature at Mysore have been since sanctioned by Government in their order dated the 11th September 1924.

The breeding work which Mr. Yonemura started, was, after his departure in September 1923, continued at the Channapatna and Mysore Farms with satisfactory results. The experiments conducted in these farms confirmed the superiority of the new races and showed that on the whole F1 hybrids obtained by back crossing with Mysore were easier to rear and gave more uniform results than the fixed races. Manurial experiments were also carried out in co-operation with the Agricultural Chemist. The Filature is reported to be steadily improving in efficiency and the cost of reeling excluding the value of raw material has been steadily reduced. The Filature has nevertheless had to contend against adverse circumstances such as increased price of cocoons and the wide fluctuations of continental exchanges. The total output during the year was 3,393 lbs. of silk and 2,364 lbs. of waste. The working of the Filature during the year resulted in a net profit of Rs. 5,366-8-2. A scheme of sericultural co-operation is reported to have been prepared and a type of society suited to the industry tentatively outlined. The report shows that even the places where such societies are to be started have been selected. Government desire that the matter should be pursued with promptness and vigour so that the arrangements for the development of this useful industry may be put on a satisfactory basis as soon as possible. The expenditure and receipts of the department excluding the Filature were Rs. 71,745-11-6 and Rs. 7,071–8–9 respectively. A text-book on rearing being the 1st Part of a Treatise on Sericulture was prepared for publication. A fairly representative collection of exhibits was sent to the British Empire Exhibition.

The Australian Tariff Board's annual report mentions, with reference to the question of tariff revision, that the position of the iron and steel engineering industry threatens to become acute, notwithstanding liberal tariff protection, owing to the pressure of competition from countries with lower wages and depreciated currency. There was the keenest competition from Great Britain, owing to the preference granted to goods containing only a 25 per cent proportion of British labour and materials. The report says that additional protection is necessary to enable the Australian woollen manufacturers to secure a fair share of trade.—*Reuter*.

Indian Emigration—A Review.

By Viator.*

This little book, the latest addition to the very useful "India of To-day" series which is being published under the auspices of the Government of India Central Information Bureau, is hardly up to the standard of some of the other volumes which have appeared in that series. Perhaps it was diffidence on this point which led its author to adopt a *nom-de-plume*, a mistake, in our view, for we consider it desirable that the author's name should be attached to a book which has the quasi-official character of those in this series in order that the reader may be in a position to judge how far he is really qualified to speak with authority on his subject. When Mr. Strickland deals with Co-operation, Mr. Harris with Irrigation or Mr. K. V. V. Iyer with Railways, their readers know that their books are authoritative and can use them accordingly. He has no such confidence when "Arthur Vincent" writes on the "Defence of India" or when "Emigrant" writes on "Emigration".

In his introductory chapter, the author points out that emigration from India has a long past but a short and interrupted history. There are vast ruins in Java and Indo-China which show that many centuries ago, Indians were not only not afraid to venture far afield but that they possessed physical and mental force enough to enable them to impose their culture on the lands in which they settled. Whether owing to the restricting influence of caste or because India was engaged in her own internecine warfare and in endeavours to repel the Muhammadan invader, the stream of emigration dried up completely for a thousand years or so. It was the demand for new sources of labour which was created by the emancipation of the slaves in the British Colonies in the early part of the nineteenth century which caused it once more to flow. Slavery was abolished throughout the British Empire in 1833. The long series of legislative enactments which have found a place in the Indian statute book from time to time began in 1837. The object of the Act which was passed in that year was to ensure that the intending emigrant realized the nature of the contract into which he was entering and that he was given proper treatment during his voyage to his destination. Proper treatment when he reached that destination was considered beyond the scope of Indian legislation at that stage and did not find a place in it until 1855. There, except for improvements in procedure and for consolidation, matters may be said to have rested until 1910 when the Government of India took power to prohibit emigration to any country at their discretion. Act XIV of 1910 was, of course, aimed at Natal. Thus, through successive stages, we arrive at the comprehensive Emigration Act of 1922 which, as the author says, makes every provision for the protection of Indian interests and Indian honour that experience or foresight could suggest.

The chapters which follow are devoted to a brief review of the history of emigration to the various Crown Colonies and Dominions and an examination of the present position of the Indian emigrant to those countries. Ceylon, Malaya and the Straits Settlements may be said to enjoy "most favoured nation" treatment, as under the rules framed under the new Act, emigration to them is subjected to fewer restrictions than it is to other parts of the Empire. It is curious, by the way that the rate of wages in Ceylon mentioned in the book should be that in force in 1917. Surely, in a book which purports to speak with some authority on the subject, it should have been possible to give later figures than this. The present position in regard to Mauritius is that, although emigration was stopped in 1910 as the result of recommendations made by the Sanderson Committee—a Committee of which the author tells us nothing beyond its name and its main recommendation—the emigration of 1500 labourers for employment on public works was permitted early this year. The request for the emigration of labourers for work under private employers was, however, refused, on the ground that the island now offers very restricted opportunities for settlement on land and is also subject to periodical industrial depressions which lower the net annual earnings of the Indian population. None the less, the author evidently considers that the Indian population in Mauritius is better off than it is anywhere else outside its own country. "The preponderance of the Indian population in numbers and its

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* Indian Emigration by "Emigrant". India of To-day Series. Volume 5. Oxford University Press, 2 Rupees net.

substantial wealth, the political and economic equality which they enjoy with other classes of His Majesty's subjects, and the natural conditions of the island which are peculiarly suited to the Indian, point indisputably to an era of increasing wealth and influence for the community in Mauritius." Conditions in Trinidad and Tobago seem closely to resemble those in Mauritius and the author's verdict is that the position of the Indian community in those islands is one of considerable prosperity. In Jamaica, they are not quite so good and the prosperity is described as "reasonable, though not substantial". Fiji and British Guiana represent a step lower in the scale. The condition of Indians in both of recent years has been such as to render investigation by a Committee from India desirable. The Committee for British Guiana consisted of Dewan Bahadur Kesava Pillai, Mr. G. F. Keatinge, who had recently retired from the Indian Civil Service and whose work as Director of Agriculture in Bombay was, one would have thought, sufficiently well known to ensure his name being spelt correctly in a book printed in Bombay, and Mr. Venkatesh Narayan Tiwari of the Servants of India Society. That for Fiji consisted of Mr. Venkatapathi Raju, M.L.A., Mr. G. S. Corbett, C.I.E., I.C.S., Mr. Sharma, Member of the Legislative Council of the United Provinces, and Lieutenant Hissamuddin Khan. We have given the names of both Committees, partly because this is practically all the information the author gives about them and their doings and partly because they show that the personnel of the Committees was carefully selected and that any views they expressed and recommendations they made would therefore carry great weight. In these circumstances, it is, to say the least, surprising that the author of the book should have so little to say about the work of the two Committees! He has a few remarks about what the British Guiana Committee found in that Colony but none at all about the investigations of the Fiji Committee. The cursory treatment of the work of the two Committees is a very serious defect in the book.

We next come to the self-governing Dominions. Canada, Australia and New Zealand present no serious problems from the point of view of the resident Indian population as they have no large Indian element. The number of Indians in Canada is now about 1,200 and the great majority of these are to be found in British Columbia where their economic condition is satisfactory though they labour under civic and political disabilities as they are forbidden to vote at Municipal and Parliamentary elections. Australia has only some 2000 Indians who are, on the whole, prosperous and who, as Mr. Srinivasa Sastri's report shows, have no serious grievance apart from the political disabilities imposed by the laws of Queensland and Western Australia. New Zealand has a still smaller Indian population which numbers only between five and six hundred. This enjoys complete equality of citizenship with the other sections of the community except that it is not eligible for the benefits of the Old Age Pensions Act. It is, of course, in Africa South and East, that most of the trouble over Indian emigration has arisen. The facts are too well known to need repetition here. The questions at issue are fairly stated by the author but we fear that his somewhat grandmotherly advice to the Government of South Africa will fall on deaf ears. In the last two chapters of the book, "Emigrant" makes some general remarks on the status of Indians in the Dominions and Crown Colonies. His conclusion is that "to the Indian, the attainment of equality everywhere of civic and political rights, and in every Crown Colony the opportunity to settle, is the goal of citizenship. For the white citizen of the Empire, the concession of that equality should be the supreme gift of his imperial patriotism. Equality is the key of Imperial unity. It should not be impossible of attainment, with the exercise of magnanimity, tolerance and mutual understanding." If only magnanimity, tolerance and mutual understanding were universally exercised, the world would soon be a pleasanter place to live in than any Utopia of which philosophers have dreamed. The grandmotherly tone, which is the surest sign that "Emigrant" is a very young man, is apparent here again and it may be doubted whether the enunciation of high sounding platitudes is calculated to further the solution of what is a very difficult problem. The facts which have been industriously collected by the author are likely to be of more use to that end than his reflections on them.

Imports into the United States in March represented a value of $319,000,000, as against $398,000,000 in the March of 1923, while exports figured at $341,000,000, which was the same as in the corresponding month of 1923.

Indian Currency Problem.

Apropos the two Bills proposed to be introduced into the Legislative Assembly next month by Sir Purshottamdas Thakurdas, Messrs. P. A. Wadia, K. T. Shah and G. N. Joshi, three well-known professors of economics, have submitted a petition to the President of the Assembly. This country, the petitioners state, has, since the closing of the mints in 1893 to the free coinage of silver, been placed in a most anomalous position in matters of currency. The avowed intention of those who were responsible for the closure of the mints was the adoption of an effective gold standard in India, to achieve which, with the least amount of dislocation to trade and industry, a period of transition had to be allowed, so as to bring up the rate of exchange between the internal silver currency and the international medium of exchange of 1s. 4d. per rupee. This intention was realized in 1898, when, on the recommendation of the Fowler Committee, it was decided that a gold standard should be introduced to the position of a token with a conventional value of 1/15th of the pound. The mints were to be re-opened to the coinage of gold for the public, but no more rupees were to be coined till gold occupied a predominant position; and the reserves arising from the profits of coinage were to be used for the introduction of a gold standard and currency. These recommendations, though accepted at the time in their entirety, were subsequently departed from in practice and in consequence, though rupees were coined in heavy quantities, the profits therefrom were after a few years sent out of India; and, instead of being kept in gold, were invested in sterling securities in a steadily increasing proportion till to-day the entire gold standard reserve, amounting to £40 millions, is invested. This means that the country was deprived of the one effective source of readily available gold for an effective gold currency.

The paper currency system was also modified to suit the altered objective of the metallic currency, so that the reserve for the fiduciary portion of that currency was first kept partially in gold, which gold was subsequently exported to London, and there, in course of time, it was invested, with the result that this second line of defence for an effective gold standard was also lost to the country. To work this system in practice it became customary to sell Council Bills on London in normal times in quantities not only sufficient to meet the requirements of the Government of India but also to meet the requirements of trade as far as possible, with the result that the surplus circulating capital of India came to be located in London, depriving to that extent Indian industry and commerce of the benefit thereof.

This practice led to a continuous increase in the volume of token currency, whether rupees or notes, and to a consequent inflation of prices. The objective of the Indian currency system thus came to be; instead of an effective gold standard, simply the maintenance of an exchange ratio between the rupee and the pound sterling. The inherent weaknesses of this system became intensified under the extraordinary demands of war finance, when, for five years, India became a creditor country in the world to a far greater extent than ever before, with the consequent increase in her demand for silver, resulting in a sharp rise in the price of that article, and the consequent breakdown of the whole system. In the years after the war the recognition of these difficulties have either been obscure or wrong remedies have been resorted to, to the permanent impairing of the entire currency system, involving heavy losses to the country and serious financial embarrassments to the government.

The petitioners therefore pray (*a*) that at the earliest possible moment an effective gold standard and currency be introduced in this country; (*b*) that the silver currency be demonetised by placing a definite legal tender limit on the same; (*c*) that the paper money be expressed in terms of the gold currency and backed by a reserve in gold bullion and gold securities and that this reserve be located entirely in India; (*d*) that the foreign exchanges be left to adjust themselves by the operation of those factors which mainly affect them; and the petitioners hope that these principles will be embodied in a comprehensive measure of currency reform.

American bankers have agreed to loan the German goldnote bank a sum of $25,000,000.

The United States budget commission reports that the current financial year will close with a surplus of from 350 to 400 million dollars.

Free Secondary Education in England and America.

By Harold T. Wilkins.*

"Your English system of secondary education is a scandal, I reckon," said a young Canadian from New Brunswick to me a few days ago. "In Canada and in the United States our public secondary and our 'common' or primary schools are free to all."

At a time when our whole education system may go into the melting-pot, it may be instructive to compare the relative position attained in England and the United States. An examination of the Board of Education's statistical tables for 1919-20 (the latest accessible at the time of writing) shows that the supply of secondary education in England is inadequate. Between 7 and 21 in England and Wales are about 10,000,000 persons, and between 6 or 7 and 18, there are 8,500,000. Only 331,000 are in State secondary schools. Again, about 150,000 children between 14 and 18 are in State secondary schools out of a total of 3,600,000 of the same age in the country. In other words, not more than 4 per cent of the boy and girl population are in State secondary schools. "The total number of children in the secondary schools, in October, 1923, was about 359,000.....and the schools are mostly full," said Mr. Trevelyan in the House of Commons, on the 12th March 1924.

The Departmental Committee on Scholarships and Free Places in Secondary Schools reported, in 1920, that there were in 1913, 49,120 free scholars (ex-elementary school pupils) out of a total of 151,045 pupils then in 885 grant-aided schools. This committee recommended that the number of free places in the secondary schools be increased to 40 per cent, but the wave of economy which swept over England in the years 1920-22 engulfed all such proposals until Mr. Trevelyan, as he said, "reversed the engines," in March, 1924.

In the same month, the Minister told Mr. Lowth, M.P., in the House, that in 1920-21 less than 10 per cent of the total number of ex-elementary school pupils passed on to secondary schools, whilst only 4.2 per cent reached the universities. Comment, in face of these official figures, is superfluous, and as to the demand for secondary education in England, one need only draw attention to Mr. Trevelyan's remark already quoted: "The secondary schools are mostly full."

Now what of the position of democratic secondary education in U. S. A. Mr. Charles H. Judd, Director of Education in the University of Chicago, says that, from 1890 up to 1915, the population of the U. S. A. increased 60 per cent, and in the same period the number of pupils in the high schools increased 300 per cent.†

Universal free secondary education in the U. S. A. dates in principle from 1850, though it was not until about 1890 that a system of State education stretching from primary or common school to University was firmly established. America has never instituted the centralized scheme of education, in our English sense of the term, whereby a Department of State co-ordinates and aids the work of local education authorities. Education in all grades is a matter for the various States of the Union, as it is of the provinces in the Dominion of Canada. The Federal Government may pay the piper by appropriations in aid of individual States, but the latter, impatient of any interference from Federal authority, will call the tune. It may be noted that since the foundation of the Union grants of Federal domain land equal in all to nearly twice the area of Great Britain have been made to 28 States for the endowment of "common" schools and colleges, and up to date £30,000,000 have been obtained from the sale of such lands by common schools (with a further £90,000,000 in prospect); and £10,000,000 (with £30,000,000 in prospect) for universities and colleges. Only 8 per cent of the U. S. high schools are privately owned, and they have 8.3 per cent, of the total of secondary school pupils.

Another striking divergence between British and American present conceptions of secondary education is that whereas, in this country, secondary education has been officially defined as "one which offers to each of its pupils (from 12 to 17 years of age) a progressive course of instruction . . . in subjects necessary to a good general education," in

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* Through the courtesy of *Education Outlook*.

† University of Chicago War Papers, No. 7, 1918.

the United States all grades corresponding to English higher elementary, technical and continuation school education would be reckoned as secondary.

"But," says Mr. James W. Norman, professor of education in the University of Florida, "the most fundamental point of difference between the English and American systems of secondary education is undoubtedly that of universal free secondary education. This is the foundation-stone of the whole system of American secondary education in its every phase. On nothing is there such complete accord."*

"This Commission holds," says the U. S. Commission on the Re-organization of Secondary Education in 1918, "that secondary education should be so re-organized that every normal boy or girl will be encouraged to remain in school to the age of 18, on full time if possible."

Federal returns are quoted by the Commission showing that one in every 73 of the estimated total population obtained secondary education in 1914-15, whilst about one-third of the pupils who enter on the first year of the elementary school reach the four-year high school, and about one in nine is graduated.

But in the U. S. A. tuition is free to all and entrance is "free to all adolescents adequately prepared, yet no maintenance grant are given to the poor in America, for fear of charity, or because of the spirit and custom of working one's way through."

We may end with a quotation from Mr. C. H. Judd's "Democracy and American Schools" (1918, Chicago): "The high schools are exclusive in the first place because the common family does not always find it possible to afford the time for its sons and daughters to continue their schooling. There is, therefore, in some measure the exclusiveness of wealth even in the free high schools. This departure from complete democracy is disappearing as the economic conditions of the average family improve."

* **A comparison of Tendencies in Secondary Education in England and the U.S., published in 1922, by Teachers' College, University of Columbia.**

Cottage Industries Institute.

Handloom weavers in Bihar and Orissa as in other parts of India are very much handicapped in the purchase of their yarn for want of facilities for testing it in the matter of counts, twist and length of yarn in the hanks and weight of the bundles. To remedy this the Government of Bihar and Orissa have established a fully equipped station where the counts, strength, twist, etc., of yarn sold to weavers may be tested.

This station is now at Gulzarbagh, Patna, and can undertake the testing of yarn for weavers of co-operative societies and the general public. The following tests among others will be carried out, *viz.*, testing in regard to 1 counts, 2 strength, 3 twist per inch, 4 length in the hank, 5 weight in the bundle, 6 quality, including cleanliness, evenness, etc., etc., and 7 in the case of dyed samples, fastness of colours. Tests will be undertaken free of cost for the present for *bona fide* home weavers and co-operative societies in Bihar and Orissa. A fee of one rupee per test will be charged to others or to those not belonging to the province.

(1) For the testing of yarn in bales or lots, three samples taken at random from different bundles in a bale, or knots in a smaller lot, should be sent. One hank is sufficient for a sample. For testing sample lots only one hank need be sent.

(2) Each sample should be labelled with a ticket with the name of the sender entered on it and a separate number or letter for the identification of the samples. In order to secure absolute impartiality in carrying out the tests, senders may, if they wish, not give the name of the mill or spinner.

(3) Except in the case of *bona fide* home weavers or co-operative societies in Bihar and Orissa, no sample of yarn will be tested unless a fee of one rupee is sent in advance for each set of the three samples of the same lot.

(4) The following tests among others can be undertaken, *viz.*, the testing of yarn in regard to (1) counts, (2) strength, (3) twist per inch (4) length in the hank, (5) weight in the bundle, (6) quality, including cleanliness, evenness, etc., and (7) in the case of dyed samples, fastness of colours.

(5) An average of the results of the tests of these samples will be entered on a certificate, which will be despatched to the sender with the samples [minus the yarn taken out for testing].

(6) Samples should be addressed to the Superintendent of the Cottage Industries Institute, Gulzarbagh, Patna, and sent by registered post.

Town-Planners of Ancient India.

Ancient Indians were great planners and builders. They built their villages and towns on definite lines and in their laying-out plans they were guided by quite a high standard of beauty and comfort. *Silpa Sastra*, an old Sanskrit work on Indian handicrafts, contains elaborate directions for the town-planner and the architect. Another work in which much valuable study of Indian architecture and town-planning is incorporated is the excellent production of Amanuel La Roche called "Indische Baukunst".

In a recent issue of "Garden Cities and Town-Planning" a contributor collected from these and other authoritative works some notes on early Indian towns. We learn from them, writes the "Property", that the most important feature of the building of a town in ancient India was the great ceremonial choice of a site with proper invocations and the performance of magical rites.

The site for a town was known as "Vastu" —a place where "the immortals and mortals inhabited." The test of the ground was to be carried on according to its "shape, colour, odour, features, taste and touch". It must be even and have mango, lemon and such other trees. There must be enough moisture in the land, and it must not have any bones of fish or flesh scattered about. Care was to be taken that no ants had built their hills there.

Two tests were next laid down for selecting the spot finally. A one-cubit deep hole was dug in the ground, and filled with water. If the water disappeared after twenty-four hours then the soil was held to be bad, but if some water still remained, then the site was an ideal one for building a town. If the hole became quite dry, it denoted that a town built on that site would crumble into dust. The second test was to dig another similar hole and fill it with the earth taken out. If the hole was quite full, then the land was tolerably good; if it did not fill the hole, then the site was to be abandoned as bad, but if it filled the hole and there still remained some over, then the soil was pronounced to be excellent.

Having chosen the site, the best spot was given to the presiding deity—the "Atma" or the spirit of the village. The hall of the temple was set apart as the meeting place of the inhabitants. The temple usually had a tank attached to it, and all the big streets were concentrated on this central point. The streets had to be straight and the two main thoroughfares had to run from east to west and north to south. The houses were more or less uniform in size and care had to be taken not to make them ungainly. The ground floors were utilized for "Vipani" or shops and at the back of the houses and by the sides were open space. The space at the sides was utilized for growing flowers and fruit trees, while the back-yard was reserved for a kitchen garden.

Endangered by foreign free-booters and internal robbers as they were, "Safety First" was the keynote of most of the towns and even villages in ancient India. It was only natural, therefore, that the town-planners of those days laid down that surrounding the village should be a high wall with a moat running round to prevent any attack. There were four main and four minor gateways. Inside the wall and running closely parallel with it, was a road round the village.

In the heart of the village near the temple there was a large flower garden and a fruit garden. A bathing tank was provided at the side of the temple with separate places for men and women. A well or two was built near by to supply drinking water to the villagers.

One of the most important places in the villages was the common rest-house where any traveller could stay. Near by was the school-house with a playground for the children. There was also a big park either within or without the village, the former preferably where the cattle grazed. The drains were built of stone and covered with stone slabs; and they carried the dirty water to the out-skirts of the village into another open tank, where special varieties of water-plants were grown so as to utilize the waste water.

Towns in ancient India were generally situated near a river or a mountain, so that communication was easy to traders coming from foreign lands and also easy to defend. Otherwise there was no great difference between a village and a town.

Japan now imposes import duties on butter, ghee, and condensed milk, which were previously on the free list.

India's Hemp Trade.*

Hemp is now in considerable demand in the London market and this demand is met only to a small extent from Russia. Imports from Russia into the United Kingdom chiefly belong to the inferior grade known as Ceretz which sells at about £50 or less. This is the grade with which Indian hemp chiefly competes. It competes, too, with tow and waste of which supplies are at present short. Latterly Indian exports have tended to decline and Russian hemp has again reappeared, but this falling off of the export is considered to be due to the fact that heavy stocks had to be liquidated in the United Kingdom. During the two years, 1918—19 and 1919—20, London took heavy supplies of Indian jute and these stocks were gradually liquidated during the succeeding years. The market is now considered bare and demands are gradually reviving in consequence. Imports of Russian hemp which in 1922 amounted to 2,000 tons fell in 1923 to 707 tons. The prospects for Indian hemp are, therefore, considered good. The improvement in the quality of exported Indian hemp which has been effected in recent years has been due partly to propaganda and partly to the payment of adequate premia for hemp of good quality. Indian hemp now stands well in the London and Antwerp markets and according to well informed opinion, there is no reason why its position should be shaken provided that the present standard quality is maintained, and if possible, improved. On the other hand, in view of the revival of Russian competition, any falling off from the present standard is likely to result in serious consequences.

The subject of improvement in the preparation of Indian hemp fibre has received a great deal of attention from the authorities concerned in this country as a result of complaints from home about the unsatisfactory quality of much of that exported from India and more especially of the grades known as "Pilibhit" and "Chandausi". The first reference was made in 1923 by the London Hemp Association on which the Government of India expressed the opinion that the remedy for the unsatisfactory quality rested to a great extent with the buyers. If a higher price were paid for clean hemp and if hemp containing impurities in appreciable quantities were refused, the evil complained of would disappear in due course. This opinion was also accepted by commercial firms in India. In 1916, the question was raised again by the Board of Trade who suggested that grading might be controlled by legislation. This the Government of India pointed out would be a matter of considerable difficulty as so many different gradings are recognized in the Indian Trade. The private marks of the big shippers carry with them a sufficient guarantee of consistent grading to satisfy most buyers, and hackling and combing as practised particularly at Bombay gets rid of the dust and dirt due to retting in dirty water. There being no suitable machinery, the fibre has to be hand hackled, but the higher prices commanded for combed hemp have given a considerable impetus in this treatment.

The dirty condition of some of the Indian hemp is due to the fact that it is very difficult to find clear water in the cold weather when retting has to be done, as most of the standing pools dry up. "Sann," being a bulky crop, the grower cannot afford to cart it a long distance: retting is, therefore, done in any pool which exists in the neighbourhood of the area where the crop is grown. Efforts have been made to encourage cleaner retting by offering prizes for clean hemp at local exhibitions, but the opinion prevails that while better cleaning does not present any serious difficulties, the additional price received does not compensate for the labour involved. Further, the dirty condition of hemp now exported is not due so much to the retting of the article as to intentional adulteration by middlemen. The remedy for this lies in the co-operation of home-buyers. If they follow the example of the English millers and refuse to take dirty hemp, the growers would be compelled to adopt better methods and the middle men would find no market for adulterated produce. What seems therefore wanted is better organization among the buyers. The Agricultural Departments in India can however help the industry by arousing an interest in the trade by urging growers and middlemen to see that the fibre is put on the market in a clean state in order to enhance its value in competition with Russian hemp.

(*See page* 481 *for continuation.*)

* Part of Memorandum issued by the Agricultural Department of Government of India.

Economics in the West.

London, October 1st, 1924.—From time to time statistics have been reproduced and discussed relating to the balance of payment effected in particular years in the case of Great Britain and the United States. The figures for the latter country have been the result of the most careful and thorough analysis of all the calculable items entering into the income and expenditure account of the United States, looked upon as a collection of individuals, corporations and public bodies, and probably in no other case has material so detailed and well-founded been published in this connection, partly because in no country is there such abundant statistical evidence and record upon which to proceed to estimate the various factors entering into any particular economic or social problem.

Recently the League of Nations has collected and published estimates of the balance of payments for thirteen countries, including both of those already mentioned. The remainder are in many cases by no means as satisfactory, in point of completeness or accuracy, as the calculations for the United States, nor are they strictly comparable one with another. Furthermore, in some cases estimates were made only for the year 1922 or an almost identical period, and are therefore subject to any peculiar circumstances ruling at that time, circumstances the effect of which it is impossible to allow for by means of comparison with the figures for other years. Nevertheless, despite all these defects, the statistics are interesting and valuable, particularly in view of the wide variety in the status of the countries included as regards capital movements and the performance of services for foreign nationals and corporate bodies. It should be added that the statistics are not in all cases official, though most of the unofficial figures have been adopted by the governments of the respective countries.

It is particularly regrettable that, owing to the unstable conditions in Germany, no figures are available for that country, though of course numerous somewhat indefinite estimates have been made of the importance of various separate items which enter into the international account of that country. No figures, again, are published for France or Belgium. From the available returns however those of six countries have been selected, three of which —South Africa, British India and the Argentine—are debtors on what is commonly known as invisible account, and three—Italy, Holland and Sweden—creditors on that account.

Some of the separate invisible items are well worthy of notice. In 1922, for instance, South Africa is estimated to have remitted abroad £16 millions for interest and dividends, India in the year to March 31, 1923, over 26 crores of rupees, or say £17½ millions, and the Argentine in the two economic years, 1920–21 and 1921–22, on balance 263 million gold pesos, or, say, on an average £26 millions per annum. Sweden and Italy also remitted substantial amounts abroad on account of the surplus of interest payments over interest receipts, largely due to the considerable external public debt of those countries. Holland, on the other hand, was in receipt of some 175 million gulden, say £15 millions, in 1922 as the yield on foreign and colonial investments.

Turning now to shipping and transport, the cost of these services, together with insurance, banking and other like charges, involved India and South Africa in payments on balance of some £23 millions and £4 millions respectively, while the Netherlands received about 240 million gulden, Sweden 130 million kroner and Italy about 300 million lire on balance. It should be emphasized here that in the case of all these figures exact comparison is impossible, and the statistics are presented merely with the object of suggesting the relative position of the various countries in connection with some of the principal items entering into the balance of payments.

Tourists' receipts and emigrants' remittances are important items in some of the returns. In the case of India they are quite small, but the money spent abroad by South Africans is estimated at a figure equal to the cost of freight and insurance on imported goods. Italy is calculated to have received in 1922 a net balance of 2,500 million lire on account of tourists' expenditure and 3,400 million lire by remittances of emigrants. The excess of Swedish tourists' expenses over those of visitors to Sweden is put at 30 million kroner, which is balanced as to one-half by remittances from Swedes in America. In the case of the Argentine large sums have to be sent abroad, the remittances of foreign residents during the two years 1920–22 being calculated at 68 million gold pesos and the expenditure of Argentine travellers exceeding those of visitors to the Argentine by 33.5

million gold pesos, or in the aggregate a net adverse balance of say £10 millions per annum.

The result of these items is to render India, South Africa and the Argentine debtors, as has already been noted, on invisible account, the balance being made up however of the different elements in somewhat varying proportions. In the two last cases interest is the largest single factor, while India pays more on account of the various services connected with trade. Italy, Holland and Sweden on the other hand are creditors on invisible account, Italy being entitled to the main part of her receipts through services performed for tourists and remittances from emigrants, Sweden on account of shipping services and Holland roughly equal amounts for interest on foreign investments and in consideration of transport services.

Judged by capital movements, only one of the countries under discussion acted on balance as an investor in the years for which the statistics are published, Sweden exporting about 60 million kroner in 1922. On the other hand, according to the statistics supplied, Holland borrowed on balance about 345 million gulden in 1922, an estimate which probably tends to exaggeration. India, according to our own capital issue figures, borrowed nearly £38 millions in the year to March 31, 1923, the Argentine is said to have absorbed an average of roughly £20 millions per annum in 1920-22 and South Africa £10 millions in 1922. Italy's account of capital movements almost balanced. Hence it may be noted that overseas investment since the war has not by any means been confined to comparatively undeveloped countries. Furthermore, investment in advanced and highly developed countries has not been restricted to belligerents recovering from the effects of war. This is an interesting feature of the returns which might well repay special investigation on a broader geographical basis. The indications are that the world's savings as a whole are not being invested to the best possible advantage, particularly when it is remembered that much of the present day international borrowing is undertaken for budget balancing purposes, which result as a rule in immediate consumption. Thus it would appear that for the time being much of one country's savings is another country's spendings, and that lending nations are to some extent supporting borrowers instead of helping the borrowers to support themselves. Eventually, of course, much of the overseas investment for budget balancing purposes itself becomes in a sense reproductive, since it makes possible a restoration of the conditions essential for a resumption of full economic activity in the borrowing country. So far as this is the case it is a perfectly sound investment, but so far as it relieves the inhabitants from contributing their full quota, in the form of taxation, to the support of the local government, or encourages laxity in collection and extravagance in expenditure, it is wasteful in the highest degree and results in stunting the growth to economic adolescence of the relatively undeveloped areas of the world's surface.

Co-operative Organization in Holland.

The co-operative organizations in Holland have received a heavy blow owing to the financial difficulties of the Handelskammer in Rotterdam. The Handelskammer is a co-operative wholesale trading body, which supplies the various retail trade co-operative organizations, spread all over the country. Such co-operative unions as are members of the Handelskammer participate in the profits of that body, at least as far as there are profits to be divided. The recent economic crisis has resulted in heavy losses for the Handelskammer. The State is greatly interested in the Handelskammer owing to the fact that in 1919 it was decided that the Government should guarantee its drafts which were discounted by the Netherland Bank. This guarantee was granted to an amount of three million florins. For the year 1922 the Handelskammer had to admit a heavy loss, partly owing to the difficulties of co-operative unions which were among its debtors. The Government thus had to face the problem of recovering its losses for the amount guaranteed. If the Handelskammer was left without support, 30% of the three millions would certainly be lost, and the co-operative movement in Holland would be irretrievably damaged. The Government therefore proposes to grant credits to the Handelskammer in order to enable it to carry on operations. The Bill has not yet been voted by the Second Chamber, but meanwhile retail trading interests are strenuously opposing the proposal, since they would, of course, be pleased to see the Handelskammer go into liquidation.

Firearms imported into Italy must bear the stamp of the testing establishment of the country of origin.

Advertising Men in Conference.

London.—The twentieth Convention of the Associated Advertising Clubs of the World was held in the conference hall of the British Empire Exhibition at Wembley, near London, and was attended by some thousands of delegates, representing many different countries. The proceedings lasted some days, and many papers were presented, there being also several functions of a social character at which important speeches were delivered. Many of the discussions were technical in character, and concerned the production of newspapers in Europe and America, and advertising from the point of view of various sections of trade. There were also many expressions of importance on current world problems. Lack of space prevents the appearance of anything in the nature of a full account in these pages, but a summary of some of the more striking points is given below.

The Prince of Wales, in opening the convention, said that the general aim of advertising was to provide throughout the world a more free exchange of commodities by a lower cost of distribution. The attainment of this aim would undoubtedly result in the elimination of unnecessary waste and in the consequent reduction of prices and unemployment. If those present succeeded in their aim, they would go far towards solving some of the great social and economic problems with which the world was confronted to-day.

An American View.

Mr. Frank Kellogg, the United States Ambassador to Great Britain, referred to the Convention of the Allied Governments, which had met with the object of solving, as in his belief it would, the greatest economic problem which had confronted Europe for generations. It was unnecessary for him, he added, to attempt to describe the great part that those to whom he spoke had to play in the world. The advertising clubs, intimately associated with the Press of the world, played a wonderful part in the economic, social, and political developments of all countries. No one was more interested in the prosperity and the advancement of the world than the advertising clubs. That prosperity made for their prosperity, and it was so with the Press. No organ had a greater influence to-day in the world than the Press. It was a great educator that made the people of each country acquainted with the institutions, peoples, languages, laws, and customs of other countries. That education was necessary for the advancement of the world, and was the greatest instrument for the peace of the world. Ignorance of each other bred suspicion; knowledge of each other allayed suspicion. What they needed to-day was for the people of all the world to become better acquainted and more familiar with each other's institutions and aspirations. Thus they might hope that war, that terrible instrument of devastation, might cease, and prosperity, peace, and happiness reign over the world.

Germany as a Market.

In a combined session of the Association of National Advertisers and the Incorporated Society of British Advertisers, Mr. M. H. Wright, publicity director of John B. Stetson and Co., Philadelphia, read a paper on "How to Develop Export Trade". He said he believed the best method for foreign firms to follow was first to communicate their business problems to the American Chambers of Commerce in that section of the United States that they intended to cover; to the United States Chamber of Commerce if a general invasion was to be made; or to a foreign Chamber of Commerce representing their country, and then to consult an American advertising agency experienced in advertising foreign-made articles in the United States.

Mr. Arthur Taylor, advertising manager of Eno's Fruit Salt, emphasized the importance of investigation into foreign trade conditions and methods, which, he said, often produced unexpected results. In some markets, particularly those in the East, the trade-mark situation should be most carefully considered.

Mr. Eric Field, director of Erwoods, Limited, London, referring to the neglect of markets, asked how many had realized that Germany was again worth their attention. The old mark, with its billions to the pound, had vanished. A mark now meant a gold mark. He did not say that everybody could yet do profitable business in Germany, but there were 60 million people, far from down and out, and every manufacturer should take immediate steps to see whether that market was not opening up for him once again. At the moment it would probably be found that the easiest opening existed for certain types of specialities rather than for staples; but it was a matter for individual investigation and individual decision. For those whose product could be sold by mail

it was supremely easy to make a trial at an absurdly small risk.

Advertising and World Peace.

Mr. Edward A. Filene, President of William Filene's Sons Company, Boston, gave an address on "Advertising and World Peace," in which he discussed the relation of advertising to an economically free Press and the resulting influence on public opinion and world peace. Summarising his arguments, he said that if the masses of the people were going to handle big national and international questions intelligently they must have facts clearly and honestly presented to them, without bias and without influence of any special interest. Public opinion was dependent for such facts upon newspapers, more than upon any other single factor. If the newspapers were to present facts clearly and honestly, they must be free—they must be financially independent. Otherwise they would become dependent on income furnished by Governments, or political factions, or special interests, by whom their "facts" would inevitably be influenced, with disastrous effects upon confidence between classes and good-will between nations. In practically all countries income from circulation was inadequate to meet publishing expenses. Newspapers, if they were not to be controlled by special interests, were therefore dependent upon their advertising revenue—which, in the case of large influential papers, called for very great advertising. Advertising—and advertising alone—made a free Press possible in the present order of affairs. And it was on a free Press that we depended for an intelligent and far-sighted public opinion. Whether the nations would live on terms of peace or whether they would be drawn into new conflicts and fresh hostilities depended in the last analysis upon the temper and judgment of that public opinion which ultimately controlled the policies of nations.

Education on Business Questions.

The Industrial Advertisers' Compartment combined with Trade and Technical Press, under the chairmanship of Mr. Fritz J. Frank, New York, listened to an interesting paper on "The Press and Industry," by Sir Ernest J. P. Benn, Bart., C.B.E., Chairman of Benn Brothers, Ltd., with which firm the "European Commercial" is associated. Sir Ernest Benn said: "Industry has, in recent years, become the plaything of politics. Politicians, the world over, are chiefly occupied with what they are pleased to call industrial questions. When I started out in business the slogan was "No politics in business". Now it would be truer to say that "There is no business for politics". Everybody is talking industry and business, except the business men. The politicians, the doctrinaires, the parsons, the youths from the universities, the new potential girl voter of twenty-one, are all engaged in discussing, not only wage questions, but the higher organization of industry itself. The rule seems to be that the less the experience, the less the practical knowledge, the more convinced and definite the views.

"As I see it, all this discussion is lopsided. The business man is still obsessed with the idea that business and politics are things apart. He gets on with his business and leaves the politician to do his worst. That is no longer an attitude that can be maintained. It is full of danger, not only for himself, which perhaps does not matter very much, but full of danger to the community. My argument, therefore, is that the Press, and especially the trade and technical and industrial Press, must apply itself with all the vigour it can command to the new and urgent job of educating the community as a whole on business questions. The business man's voice must be heard. If, for instance, the electors—thirty millions of them as there will be presently—are to decide wages questions, for that is really what we have come to, surely the proper and necessary thing is that attention should be directed to the nature of wages, what they are, what they come from, how they arise. It is perfectly safe to say that the electors in this country will be quite happy to settle wages on the basis of the cost of living index figures. It is to me a most damaging indictment of the business classes as a whole that the idea should have been allowed to get hold of the people in the way that it has.

The Example of Austria.

"The business man who knows anything about economics knows perfectly well that you might as well settle wages on the basis of the betting odds, or the birth rate, as on the basis of the cost of living. The two things have absolutely nothing whatever to do with one another. Wages come out of production and out of nothing else. The cost of living is a degrading measure by which to regulate them. The example of Austria is sufficient to show the folly of the index figure fetish. There, as you will remember, the unskilled labourer tasted all the joys of a wage which at the pre-war rate of exchange was the equivalent of £75,000 a week, and found

himself worse off in the end. The folly of the whole business is evident if one only remembers that a wage has to be paid before the article is sold, and that involves a lapse of time. It does not matter whether it is a day, a month, or a year, but that interval involves the payment of interest to somebody. It does not matter whether it is a private individual, or a bank, or a State, and therefore the extra pound paid in wages adds something more than a pound to the cost of living, and every rise of wages without a corresponding improvement in production means a still wider gap between wages and the cost of living. The more, therefore, that one applies this idiotic measure of the cost of living index, the greater becomes the disparity between the rate of wages and the cost of living. An index figure is neither a good reason for raising a wage nor for lowering it.

"Again, take the question of profits. As Sir Alfred Mond pointed out in an admirable article in the Press, to make a profit is now almost a crime. The public as a whole, not only the Socialists, but even the Tories, have got so accustomed to hearing of the iniquities of profits, that the general impression is that profits are a thing to be abolished, or, at all events, that they are made at somebody else's expense. In a matter like this, the public mind is absolutely warped, and it is up to the business man through the business Press, to try to get it straight. One cannot perhaps hope for very much help in the direction I indicate from the public Press. They must report the doings of the public man, however foolish those doings may be. But the business Press is in a different category, and it must take a new line in this matter. It is no longer sufficient for us of the business Press to content ourselves with describing finished products and discussing their qualities and points and prices. We must turn our attention to the principles of business itself and put up an answer to the Socialists, who say that profit enterprise is the cause of poverty and that the ownership of the instruments of production must undergo some change. The world wants nothing more to-day than a course of instruction in sound economics. That course of instruction will not be forthcoming until the business men are prepared, as a class, to contribute their quota towards the knowledge on which such a science can be founded. The business class must justify their profits—surely no difficult task—and this must be done through the business Press."

A Resolution for Peace.

A striking feature in the final stage of the proceedings was the demonstration which followed the submission of a resolution condemning war. The delegates from different parts of the world rose and cheered. When the enthusiasm had subsided and the resolution had been carried the President (Mr. Lou E. Holland) suggested that the accredited delegates from each country represented at the meeting should sign the resolution. Another outburst of cheering followed this proposal, and each delegate, when his name and that of his country was announced, was enthusiastically greeted as he proceeded to the platform to sign the document. The resolution was as follows :—

"Whereas we, the delegates to the 20th annual convention of the Associated Advertising Clubs of the World, assembled in London, England, in July, 1924, realizing that we represent the business men and the avenues of publicity of the progressive nations of the world, appreciate the unspeakable tragedy of the Great War which staggered and overwhelmed the world ten years ago: Therefore be it resolved—

"(1) That we declare it our firm conviction that war as a method of adjusting international misunderstandings is the supreme peril of humanity, and that we affirm the leaders of the nations of the world ought now to be called upon promptly to take such steps as will guarantee the security of the people against the return of the use of aggressive force. We condemn war as the enemy of human progress, and as futile as a means of adjusting disputes among the nations.

"(2) That we pledge our utmost endeavour to awaken a more intense public sentiment against all those insidious movements which have a tendency to arouse war passions, and to favour all proper efforts which are working to accomplish universal enduring world brotherhood and peace. We call upon the Advertising Clubs of the World to make this message of international good-will part of their permanent programme until war shall have a place only in history, and world service, comradeship, and international co-operation shall become universal."

The resolution was signed by representatives of the following countries :—

England, the United States, Holland, Ireland, Ulster, France, Germany, India, Canada, New Zealand, Australia, Hawaiian Islands, Belgium, Sweden, Switzerland, Denmark, and Scotland.

Canadian Trade and Finance.

Montreal, October 1st, 1924.—Recent private estimates of the Western wheat crop show that the Prairie Provinces may harvest close to 300,000,000 bushels this season, weather conditions at the close of the growing season having been favourable. Straw is generally light, the labour supply adequate, and wages lower than in 1923, so that the expense of handling the crop will be reasonable, which should help in giving the farmers a satisfactory net return. In estimating the probable profit from this year's operations, it should be borne in mind that the increase in wheat prices in Winnipeg, from about $1.00 per bushel a year ago to about $1.40 per bushel at the present time, represents more than a 40 per cent increase, so far as producers are concerned. The farmer who got in the neighbourhood of 75 cents a bushel for his No. 1 Northern wheat last year should get approximately $1.15 this year, an increase of over 50 per cent. If the average grade of the crop is as good as in 1923 and prices hold at current levels, net profits should equal those of last year. The railways will be the main losers from the smaller crop.

Crops in Ontario this year are among the best ever harvested. As prices are in general much better than in 1923, it is expected that the financial position of the farmers will be materially improved.

In other provinces, crops are reasonably good.

The lumber industry in British Columbia is still suffering from quiet conditions, but the outlook has improved. Notwithstanding reports of a very quiet Oriental market, 10,180,000 feet of lumber were shipped to the Orient from Vancouver during the month of August. The eastern lumber market continues dull.

The manufacturing industries, with few exceptions, are operating on a reduced schedule. An improvement is dependent on an increase in retail and wholesale buying. Although there is only as yet scattered evidence of such an increase taking place, a seasonal improvement in the autumn can be expected. Furthermore, it seems reasonable to believe that business throughout the next twelve months will be a little more active than at present, since fundamental conditions have been improved by the recent rise in the prices of many farm products. Moreover, better prospects for making money in agriculture should result in an increase in immigration in 1925.

The Newsprint Paper Industry.

In contrast to the many industries which have found business since 1920 none too good, the newsprint paper industry stands out with a record of having increased its output 42 per cent during the last four years. Newsprint paper prices fell off sharply at the time of the general price collapse. Consumption of paper, however, did not continue at a low rate in the United States for very long. By the latter half of 1921, it commenced to increase, and 1922 and 1923 were record years. Although prices have never shown any tendency to mount towards the level of 1920, they recovered slightly in 1923 and have been high enough to enable Canadian mills to operate on a profitable basis. Encouraged by this state of affairs, the Canadian industry has increased its productive capacity substantially since 1920. Actual production in 1923 was 1,263,000 tons, and it is estimated that, by the close of 1924, Canadian mills will be capable of producing 1,516,000 tons of newsprint paper per annum. In the United States, production is not increasing, the tendency in fact being towards a decline.

Although 1924 shipments from mills have been larger than those of 1923, these shipments have not absorbed in full the increased production, and operations were accordingly restricted somewhat during June and July, in order to prevent the accumulation of too large stocks. It seems probable, however, that stocks again increased during August. The situation should be improved by an increase in the consumption of newsprint in the United States during September and October. Subsequent to that, the outlook is somewhat uncertain. It is quite probable that the improvement in business, which has recently been noted in the United States, may continue in 1925, and should it do so, the effect on the newsprint paper market will be good. In any event, the Canadian industry seems to have nothing to fear in the long run.

The growing population of the United States should ensure a moderate annual increase in that country's importations of newsprint paper. Moreover, the prospects for a settlement of the reparations question have a favourable

bearing on the situation, because an improvement in business in Europe might lead to an increase in the consumption of newsprint by European countries, and tend to lessen the severity of European competition in the paper markets of North and South America. The United States is now importing newsprint from overseas at the rate of at least 150,000 tons per annum, and although this is a small amount in comparison with total consumption, it is nevertheless a factor in the market. Since 1920, European firms have taken away our paper customers in South America, so that a gradual increase in European consumption would not only tend to give the Canadian industry a clearer field in the United States, but might also result in opportunities to regain some of the foreign business which was lost a few years ago.

THE UNITED STATES MONEY MARKET.

The Weekly Letter of the Harvard Economic Service, dated September 6th last, contains some highly interesting remarks in regard to the financial situation in the United States, with special reference to the effect which conditions in the money market of that country may have on European finance, during the period of recovery which it is hoped that the Reparations Settlement will inaugurate. The article in question refers to the desirability of European countries returning to the gold standard, and it regards this development as not so remote as might have been imagined a year ago. It points out that an attempt to curtail credit or deflate commodity prices in the United States would make it difficult for European debtors to meet their obligations in that country, without shipping large amounts of gold, thereby jeopardizing the successful resumption of specie payments in Europe. Summing up these remarks, the article says:

"Upon countries like Great Britain, which are already undertaking to meet their obligations to the American Government, high money rates and commodity price deflation in the United States would impose burdens that would probably make a restoration of gold payments impossible. Since the stake we have in the success of the experiment will be so great and our responsibilities as a creditor nation will be so obvious, it is reasonable to expect that the financial policies of the United States during the period when Europe is trying to return to a specie basis will be favourable to easy money and to the maintenance, or even the actual rise, of commodity price levels.

"When these factors will begin to affect actual business conditions cannot be safely forecast; but they may become operative not far from the time when the German mark is definitely stabilized. Looking ahead, therefore, some six to twelve months, this country not improbably faces conditions which will make for continued ease in the money markets and for a relatively high level of commodity prices."

The policy advocated above is apparently being followed in the United States to-day. All but one of the Federal Reserve Banks have lowered their rediscount rates within the last five months, that of the New York Federal Reserve Bank having been reduced three times during the period referred to. The Federal Reserve Banks have latterly done nothing to counteract the influence of fresh importations of gold. Between April 16th and September 10th, Federal Reserve Bank holdings of U. S. Government Securities and bills purchased in the open market increased $218,000,000, while member bank borrowings decreased $209,000,000. The central institutions are keeping the market well supplied with funds.

If easy money and firm commodity prices in the United States will be of assistance to European countries in stabilizing their curriencies in New York (and this should be the case) then the policy referred to is an excellent one, because there is no doubt that the exchange fluctuations of the last few years have been a severe handicap to exporters and importers, and have tended to reduce the volume of international business.

(*Continued from page* 474.)

It is maintaned by Mr. Francis Agar who is the head of the chief and oldest firm of hemp brokers in the city of London and who has been in the hemp trade for over 40 years that Indian hemps suffer through defective grading and indifferent retting and mixing. He is convinced that certain grades and qualities ought to command a better position in the world's market than they do at present, if only they could be obtained in quantity and up to quality. He visited India during the last cold weather for discussing with the authorities here improved methods of producing Indian hemp. He lays emphasis on the fact that now when Russian hemp is difficult to obtain, there should be little difficulty in finding for Indian hemp of good quality remunerative prices in London and on the Continent.

Notes from America.

Washington.—Herbert Hoover in the United States Department of Commerce has a Division of Simplified Practice which has been discovering facts about business practice very damaging to the much vaunted "American business efficiency". The waste, it appears charged up to business because of inefficient and often very foolish methods of production, distribution and sale is estimated to come to the staggering sum of ten billion dollars a year. This figure does not include all the vast values destroyed every year but relates solely to avoidable waste and is the estimate of William A. Durgin, head of Hoover's Division of Simplified Practice, who, like his Chief, is himself a distinguished engineer accustomed to deal with hard facts and who has under his direction a large staff of specialists engaged in the study of industrial waste.

Mr. Durgin, in talking on this subject recently to John T. Flynn of the New York World, said that in the production of fabrication of metals, highly organized though this great American industry is, they had found that waste is permitted to devour every year twenty-nine per cent of the industry's expenditures. "Yet, compared with other industries, this is a good showing," explained the engineer. "In the boot and shoe trade the loss is forty-one per cent. In the textile industry for every yard of goods made the value of another yard is wasted. In the building trades the annual waste amounts to fifty-three per cent, and in the printing trades fifty-eight per cent. The men's clothing business has the worst record. It costs as much to make a pair of pants as it should cost to produce a whole suit."

Asked for an explanation of the manner in which so-called shrewd and prudent American business men permitted this tremendous loss in their operations, the reply was, "The waste we are warning against comes entirely from the practice of overdiversification. For instance, take the manufacture of axes. An axe seems a fairly simple sort of tool. Some months ago I had a conference with three leading manufacturers of axes. I found that they were making thirty-four models in four qualities, eleven finishes and from five to nineteen sizes. This means that they were actually offering in their catalogues over six thousand varieties of ordinary single-bit axes. The situation is even worse than this, however, for a sufficiently insistent purchaser could get any one of the thirty-five brands, in any of the eleven finishes, in any of the nineteen sizes. This afforded him a wide range of choice between 994,840 varieties of axes.

"A manufacturer of men's hats at this very time produces for the more or less standardized male head 3,684 styles and colors of hats. We have found that ninety per cent of his business is done on seven styles in ten colors. But he insists on carrying the remaining 3,600 kinds to get ten per cent more business. This means that the ninety per cent who are content to wear the usual styles must pay a huge tax to support the queer tastes of the other ten per cent. It is from the enormous production costs entailed by this useless diversification that the great bill for waste comes. The remedy is simplification."

The government in this work is not aiming at standardization but by helping manufacturers to get at the facts for themselves is trying to get them to confine their production to the sizes and types actually in demand and to cut out the unnecessary styles which add enormously to their cost Every month new groups of manufacturers are adopting the new plan. A typical case is that of a great manufacturer of foods who, persuaded to simplify his products, decreased the variety 89 per cent. "For every dollar he spent on his sales force before," it was explained, "he now spends 27 cents. For every dollar he formerly spent on advertising, he now spends 22 cents. For every dollar he spent on overhead, he now pays out 20 cents: His sales have increased 600 per cent." The Department records show incidents like this.

Of course in the United States where in spite of much governmental control these days, it is the fashion still to descry all government interference with the individual's right to carry on his own business in his own particular way, the Department of Commerce bas been open to some criticism for thus spending the people's money to save business men from their own folly. But the savings effected have already been so great that very generally it is conceded the results have justified the means, more especially as it is realized that the inauguration of simplified practice in any industry requires the co-operation

of so many men in so many groups that they would never be brought together without the aid of the Government.

THE FASTEST-GROWING SPORT.

"The fastest growing outdoor sport by all odds is automobile gypsying," writes Frank E. Brimmer in *The Outlook*. "Twenty-one years ago," continues the writer, "the motor car was a rather unpromising, wheezy infant; and not a single automobile route penetrated the sage-brush and sand west of Nebraska, but during 1903 three automobile trails were blazed across the continent. Due to the inhospitable condition of the country west of Omaha, the first long-distance gasoline trippers carried a complete camping equipment, so that they could stop and set up housekeeping just where night or the inclination overtook them. To-day the motor caravansary has appeared, located in almost every city and town on the main throughfares, so that one may march his autotent from one end of the land to the other and spend every night under his own canvas in a municipal motor camp. In a little more than twenty years the automobile has revolutionized the average American's vacation, it has brought about a renaissance of the outdoors, and it has firmly planted a brand-new outdoor sport. Between five and ten millions motor-gypsied last year.

"Just as the automobile reaches out and touches the life of Americans in every walk of life, so motor camping has spread out its fingers and embraces every class. It is undoubtedly true that ten years ago motor camping was just a bit 'irregular' and was adopted rather from the force of circumstances than because of any widespread appreciation of its recreational value; but to-day, especially in the West, and indeed throughout the country, it is as universally omnipresent as the automobile itself. One does not have to feel 'conspicuous' any longer when driving on a city boulevard with an outfit-gorged car; indeed, at least three well-known automobile manufacturers are building special sport models for the convenience of the gasoline vagabond, who only needs to fold down the back of the front seat to make his sedan his bedchamber, while the kitchenette is waiting on the running board or luggage-carrier in the rear. Besides special automobiles there are various standard camping cars with complete home conveniences built upon a truck or automobile chassis, as well as a dozen different types of excellent camping trailers with complete accommodations for four or five persons craftily built upon two pneumatically shod wheels that will follow the car anywhere."

This sudden development in autocamping has brought with it a vast amount of manufacturing of various accessories for the motor gypsy-portable gasoline stoves, tents of all sizes and kinds, portable ice chests, cooking utensils, folding chairs and cots, and keen has been the competition of makers and sellers to attract the fancy dollars of the new army of buyers.

"From the recreational standpoint," continues our authority, "motor camping has taken hold of Americans as has no other participating sport, because it appeals to the heart of hearts in the breast of every lover of the outdoors, and, while certain limitations may keep a great many from golfing, fishing, canoeing, and the other outdoor sports, the only requisite for gasoline gypsying the forests, mountains, and beauty places of the country is an automobile.

"Just a few authentic figures will indicate the wonderful recreational value of motor camping. Last summer over 600,000 campers stopped in Overland Park, Denver; more than 300,000 visited the three hundred public camps of Minnesota; 110,000 tented on long-distance trips along the Yellowstone Trail between Plymouth Rock and Puget Sound; 22,000 enjoyed the hospitality of the Government's huge thousand-car motor camp in East Potomac Park, Washington, D. C.; of the over 8,000,000 of motorists checked in the National Forests over 1,000,000 carried camping equipment and spent their nights in the fifteen hundred camping parks maintained by the United States Forest Service; 168,000 motor campers invaded Southern California, and the Sacramento Chamber of Commerce reports for Northern California and the State at large another 50,000 gasoline campers; Spokane, Washington, entertained in her municipal motor camps a total of 60,000; the Custer Battlefield Highway, extending from Omaha to Glacier National Park, reported 18,000 automobile campers last year; and the American Automobile Association reported that one out of every four of its members carried a camping outfit, which, by the way, is considerably less than reports received from every other touring organization checking campers.

"The economic phase of the new avocation of automobile camping is something to conjure with, for overnight, so to speak, a gigantic

industry has sprung up that represents a remarkable asset to the communities selling themselves to the tourists. Replying to our question as to the average value in dollars and cents of the motor camper per capita per day, the following replies are worth pondering: Denver puts the count at $10 per day and the asset of her big motor camp of one hundred and sixty acres at over $600,000 for last season; Minnesota found that the motor campers in her midst left $4 each; Washington, based on the report of the Seattle Chamber of Commerce, received $7 per day from motor nomads; Southern California reported $3.50; Northern California placed the figure at $7.50. Basing the estimate on what appear to be very conservative figures—that is, 5,000,000 motor campers on the trail but fifteen days each—the asset of straight motor camping towers up to the $400,000,000 mark annually."

Radio: A Major Industry.

Radio is now one of our major industries, with an impressive present and a hopeful future, even if its past is measured by only a few years, comments *The Outlook*. In value of products it stands thrity-fourth among American businesses, ranking well with such others as motor-vehicles, leather, and shipbuilding, and taking rank ahead of railroad-car construction. It is "a truly established part of the economic scheme—a part and parcel of the lives of the inhabitants of the United States with as definite a place in their scheme of things as the very shoes they wear."

"On the basis of figures for the year 1923", a writer in *Radio News* states, "it is probable that the American people will spend approximately $350,000,000 for radio equipment during the present year. A conservativs estimate of the business in vacuum tubes alone is about $50,000,000. At least five times as much, or $250,000,000, will be spent for radio sets and parts. The sales of batteries, both dry cell and storage batteries, will very likely amount to over $45,000,000. Miscellaneous equipment such as battery chargers, loud-speakers and specialities may easily account for $50,000,000 more.

"The value of the radio business is nearly twice as great as that of the carpet and rug business. For every dollar spent on furniture, thirty-three cents is spent on radio. For every dollar spent for boots and shoes, twenty-five cents is spent for radio. For every dollar spent for musical instruments of all kinds, including phonographs, pianos, organs, etc., seventy-five cents is spent for radio. The value of radio business amounts to nearly three-fourths of the jewelry business as a whole, including clocks, watches and novelties.

The Yugoslav authorities are paying considerable attention to the rearing of silkworms, and the Ministry of Agriculture has organized courses of instruction throughout the country, besides replacing large quantities of the mulberry trees which were destroyed or perished in various ways during the war (says the *Central European Observer*). Last year (1922) the following amounts of cocoons were produced in the various provinces: Old Servia, 6,316 kg.; Croatia, 51,761 kg.; Vojvodina, 292,208 kg.; Macedonia, 227,300 kg. In Bosnia, Herzegovina, Dalmatia, and Montenegro the rearing of the silkworm has not got beyond the initial stages. The Belgrade trade journal, *Privredni Pregled*, sees a great obstacle to the development of silkworm cultivation as an industry in the fact that there is a very serious divergence in the prices paid for the cocoons. In Macedonia they are sold in the open market at 117 dinars per kg., whereas, for example, in the Vojvodina the State buys under a monopoly privilege and pays the breeder no more than 35 dinars. The *Pregled* advocates the fixing of prices in accord with the breeders.

In the old days, a Parisian who had a well-established luxury business, was usually content to sit still in his shop and wait for customers. He relied on the old reputation of his firm and the Parisian habit of telling one's friends that such and such an article can be had to perfection only at one particular shop. These methods are now completely out-of-date. The man who has something to sell must mingle with the life of those who are likely to buy. At least one business family has adopted this new principle in the most thorough-going way. The father, who is still an excellent horseman, rides in the Bois every morning during the season, so that his customers will not forget him. In the meantime, the mother and her two daughters attend to the accounts and correspondence, and in the afternoon, they frequent the fashionable tea and dance places, also for business reasons. The eldest son, on duty in the evening "covers" the theatres and night restaurants in Paris and the fashionable water-places. Thanks to this union of intelligent effort the business flourishes.

Agricultural Notes from U. S. A.

Washington.—Fines amounting to $3,700 were imposed on 16 violators of the 28-hour law in cases that were prosecuted during the month of June, according to reports of the United States Department of Agriculture. This Federal law requires that shipments of livestock must be given proper feed, water, and rest after 28 hours of continuous confinement in shipment. While the railroad companies endeavour to comply with the law, uninformed and careless employees cause most of the violations.

Rigid enforcement of the law has resulted in greatly bettering conditions under which livestock is shipped. In order to comply with the law many railroad companies have so greatly improved their transportation and yard facilities that stock now suffers little discomfort, while *en route* to market.

Smokers Cause 862 Fires in 1923.

Carelessness with cigars, cigarettes, pipe ashes, and matches was the cause of 862 forest fires within the boundaries of national forests during 1923, according to figures recently compiled by the Forest Service, United States Department of Agriculture.

The damage caused by these smokers' fires is estimated at $31,000, exclusive of the indirect and intangible damage to young growth, watershed protection, wild life, and recreational facilities.

One of the objects of forest protection week, which President Coolidge set side last April by proclamation, was to emphasize the need of care with fire while in wooded areas. The number of smokers' fires eloquently tell of the need for public education, forestry officials assert, if the fire hazard in America's woodlands is to be stamped out.

Equipping automobiles with ash receptacles is one of the things advocated for overcoming the tendency to flip burning tobacco ashes over the side of the car into leaves, brush, and other highly inflammable material usually lying along highways bordered by trees.

National Forest Roads.

With the signing of the Agricultural appropriation bill by the President, June 5, $6,000,000 was appropriated and $4,000,000 authorized for the construction of forest roads and trails. Of the $6,000,000, $3,500,000 had previously been authorized for the fiscal year 1924. Of the remaining $2,500,000 appropriation, half is forest-highway money which will be spent upon roads of primary importance to the counties and States. The remaining half is known as forest-development money and will be expended on roads the greatest importance of which are for use in the development and protection from fire of the national forests. Of the authorized amount $2,250,000 is forest-highway and $1,750,000 forest-development.

Farm Water Supply.

Three farm water-supply systems recently installed at moderate cost in Davidson County, Tenn., in connection with co-operative extension work in that county have influenced nine neighbouring families to put in similar systems. These range from a simple pump at the kitchen sink to complete systems.

In one of the demonstration systems a simple force pump lifts the water over 20 feet from a spring 180 feet distant and then forces it into a tank 10 feet above in the attic. The pump works, it is said, with remarkable ease. Water for this home, including that used for bathing and other toilet purposes, has cost less than $100, according to reports to the United States Department of Agriculture. Another and more elaborate system has been built during a period of years, the owner doing most of the work himself. This is a gravity system, the water coming from a spring 1,200 feet from the house with about a 100-foot fall, and supplies a kitchen sink, tub and shower bath, laundry room, and several outside connections for livestock. Materials cost, the owner estimates, about $150. The third system is supplying running water for a farm home and a house used by men working on the farm at a cost of $180.

Forest Fires Spread with Great Rapidity.

The startling rapidity with which forest fires spread was brought home forcibly in the recent bad fire on the Arapaho National Forest in Colorado.

The Arpaho fire started from a camp fire left smouldering by careless motorists and burned 2,500 acres of excellent pine timber in a little over three hours. This rapid destruction took place despite the fact that officers of the Forest Service with a force of 250 men began fighting the fire almost as soon as it started.

A very low relative humidity and a strong wind here were two factors that made it hard for the forest officers to control the blaze, which jumped to the crowns of the trees and

destroyed in three hours what nature had been a hundred years in building.

"The moral of the Arapaho fire," stated officials of the Forest Service, "is that every camper should make sure his camp fire is out—then bury it."

New Wild Life Refuge.

The upper Mississippi River wild life and fish refuge bill was passed by Congress and became a law on June 7 on approval by the President. This act authorizes the acquisition and setting aside as a wild life refuge of about 300,000 acres of swamp and low lands along the Mississippi River between Rock Island Ill, and Wabasha, Minn. The act carries no appropriation, however, for the acquisition of these lands, merely authorizing funds to be appropriated for the purpose. The limit of the appropriation authorized is $1,500 000 for the acquisition of areas and $50,000 for administrative purposes, $25,000 of the latter sum to be expended by the Secretary of Agriculture and $25,000 by the Secretary of Commerce. The Government, therefore, has no funds at present to proceed in the purchase of land or in the establishment of an administrative force. When the necessary appropriations are made by Congress and the areas have been acquired, the Secretary of Agriculture is to have jurisdiction with respect to wild birds, game animals, fur-bearing animals, trees, wild flowers, and plants, and the Secretary of Commerce jurisdiction over the fish and other aquatic animal life. These officials are authorized to make suitable regulations governing hunting and fishing on the areas acquired.

Cow-Testing Associations.

A detailed report of cow-testing association work in the United States and of the increase in number of associations will not be due until January 1, 1925; but figures now on file in the Bureau of Dairying, United States Department of Agriculture, indicate that on July 1, 1924, there were about 730 cow-testing associations in active operation, as against 627 a year ago. This is a gain of over a hundred during the past year, or a gain within the year of a little more than 16 per cent.

Though there was some increase in the number of associations in many States, the big gains were in a few States. Those having the largest actual increases are given in the following table:—

State	Number of associations.		
	1923	1924	Increase
Michigan ..	53	91	38
Minnesota ..	55	90	35
Iowa	47	61	14
Wisconsin ..	151	163	12
Kentucky ..	10	20	10
South Dakota ..	4	10	6

Michigan ranks first in increased number of associations with a gain of 38, but Minnesota is a close second with a gain of 35. Wisconsin still leads in the number of associations, but Michigan and Minnesota are gaining on Wisconsin. Iowa, Kentucky, and South Dakota are also making substantial gains.

This increase in the number of cow-testing associations is very encouraging. It means that year by year more of our dairy cows are being placed on yearly test. More testing means more economical production, and more economical production benefits both the producer and the consumer.

If a mosquito is having a meal on your body, let it finish before you kill it. Such is the advice of Professor Harold Maxwell-Lefroy, Professor of Entomology at the Imperial College of Science and Technology, South Kensington, S.W.—one of the leading experts on insects in England. "It is more dangerous to brush off a mosquito than to let it have its fill," he said. "If you wait till it begins to draw its proboscis—an elongated sucking organ—out of the skin, it has then probably sucked out again all the poison it has put into you. It requires patience, but it is the best thing to do. One way to keep off mosquitoes is to put an ointment containing citronella oil on the skin. Mosquitoes hate this. They also hate cassia, but many people hate cassia as much as they do mosquitoes." Aeroplanes are to be used in the battle which the French hygienic authorities are waging against mosquitoes, which swarm in certain swampy districts of Alsace and Lorraine. It has been decided to use them to spray petrol on the marshes, thus effectively killing mosquito larvæ.

The Middleman in Trade.

By Sir Ernest Benn.*

The place of the middleman in the scheme of distribution of goods from manufacture to consumer is constantly under discussion, and the belief is widely held that he is useless, and that his elimination would be to the general advantage of the community as a whole. Unfortunately, the public has dropped into the habit of thinking of the middleman as one who buys an article for 1s., sells it for 1s. 6d., and robs the consumer of the difference between the two prices. This explanation of trading, whether wholesale or retail, which is freely given to the inquiring elector by the Socialist orator, does not fail to make its appeal, and it has to be confessed that it is often all the information that is given to the public about trading practice and methods. This being so, there is little wonder that many people outside the ranks of Socialism hold the term "middleman" to be one of opprobrium, and few suspect the blessing which the middleman class confers, or the troubles into which the people would fall if that class were really abolished.

The uselessness of the middleman doubtless first came forward as a theory when Karl Marx declared that wealth was composed of land and labour, and that all wealth consists of labour applied to land. It is a matter of surprise that individualists have allowed that destructive theory to get the firm hold that it has upon the mind of the public. There is nothing more absurd in the whole realm of political definition than the theory that wealth is land and labour. John Stuart Mill defines wealth as "all things useful and agreeable having an exchange value". Those of us who live in these highly specialized times can realize, possibly even better than Mill, that exchange is the very essence of wealth. If there is no exchange there is no wealth in the material sense.

The Essence of the Competitive System.

We have reached a stage when it can be claimed that the exchange part of the process of wealth production is of far greater importance than any other factor. It is comparatively easy to make a thing, but generally very difficult to sell it, and unless it is sold or exchanged it is no use making it.

In the interests of the middleman, or rather in the interests of society as a whole, a new attempt should be made to define wealth. If such an attempt were made, I believe we should get a definition something like this: "Wealth is the art of exchange." When riches consisted of gold and silver and precious jewels, flocks and herds and lands, wealth was a very much simpler thing than it is to-day, very much less widely diffused and very much more difficult to get hold of. In those days the middleman did not exist, and the greatly improved position of the masses of the people can be attributed very largely to the creation and development of a vast class of middlemen, who now are held up as parasites and blackmailers.

The middleman is at the very heart of the competitive system; and, incidentally, it may be observed that few words in our language are more loosely used, or so little understood, as the word "competition". A great many people conceive competition to consist wholly of stealing another man's business. There are those who assume that one middleman could supply a whole area, and that if the number of shop-keepers or middlemen in any line of business were reduced costs would be correspondingly lowered and economy would be secured. In most cases, of course, this is far from the truth. This purely superficial view of trading and competition illustrates in a striking manner Professor Marshall's statement (to which reference was made in an earlier article) that the underlying, or secondary effects, of an economic cause are frequently more important than, and in the opposite direction to, those which lie on the surface and attract the eye of the casual observer.

The Most Active Market Maker.

Competition creates a market. If you would realize this to the full you have only to go out with some article that has never been seen before—an article with which there is no competition—and try to sell it. You will be received by the public pretty much in the same spirit as the witches were received in the Middle Ages; you will be regarded as a person with a cranky idea and will do very

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* With acknowledgments to *The European Commercial.*

little business. Turn to the goods in which the competitive element enters and you will find that when two competitors in the same line of business are pressing for orders the total of their trade is, as a rule, far more than twice the volume of trade that would be done by either one of them singly; and when some hundreds of people are engaged in advertising, displaying and otherwise offering the same class of goods a demand is created which gives to each of them opportunities that they could not secure by any other means.

Competition, if the dictionary were really accurate, should be defined as market making, and the middleman is the most active market maker the world possesses. When two firms are engaged in the same line of business in the same locality, it may appear, at first glance, as if the consumers are paying two expensive organizations to perform work which might equally well be done by one. In practice, however, extra expense in this direction is more than saved to the consumer by the energy and thought and skill which each has to put into the business in order to keep his place and get a livelihood.

It does not follow that reduction of expenses is the road to real economy in trade and business. The aim of a business service should be to give to the public as much as it can, and the almost universal experience is that added expense which gives more than a proportionate additional service or supply is a real economy. When advertising was first beginning to get a hold in this country it was commonly supposed that it would put the commercial travellers out of work, and they, as a class, were opposed to advertising. Later, it was thought that Press advertising was against the printer, as the newspaper announcements would take the place of the circular and catalogue. Successful traders have now learned that the most economical course is to use to the maximum all three forces—advertising, travellers and circulars; they realize that one helps the other, that each does more as the result of the others and that added expenses in any of these directions reduces the ratio of cost to turnover.

It is sometimes argued that the great corporation owning multiple shops makes such a success of its business as to justify the belief that a public organization controlling and distributing all supplies would be advantageous. The multiple shop system may have had its effect on general trading efficiency, but it has not, as a whole, produced much economy, and the cost of organizing the multiple shop service is probably much the same as the cost of running a number of smaller individual businesses.

THE TRADER AS AGENT OF THE CONSUMER.

Having said so much by way of showing that the middleman is a useful, and not a useless, member of society, that he has a very definite place in the scheme of things and that he operates generally for the benefit of the community, it is necessary to say that the middleman is perhaps his own worst enemy in these post-war days. It would be absurd, speaking of the middleman as an individual, to pretend that he was consciously striving all the time to reduce his price and to improve his service, but the absence of conscious right-doing does not affect the argument, for the system under which he works—the presence of many others in the market—generally forces him to do the right thing economically. In recent years, however—thanks firstly to war restrictions, and secondly to abuse of the association idea—middlemen as a body have failed to live up to their responsibilities.

Middlemen are not true to their own interests, or true to their class, unless in their day-by-day practice they decline to take advantage of the opportunities which come their way to secure temporary and unjustifiable profits. The middleman must—and I believe will—get back to full appreciation of the truth, of which he was so constantly aware before the war, that his duty is to act as the agent of the consumers, striving always after economy and efficiency. During the war it was necessary to re-organize trading practice on a basis of scarcity. Now that policy has to be abandoned and prices have to be figured on a basis of an ever-increasing volume of trade. Only in that way will trade being to improve, employment increase and prosperity develop.

The Government of British India has decided to establish at Nasik its own press for the printing of banknotes and of postage and revenue stamps. Building operations are to commence forthwith, and the necessary machinery will be imported as soon as the premises are ready for it. At present an English firm holds the contract for all stamps required by the Indian Government, while the Bank of England supplies all Indian currency notes. The former contract expires at the end of this year, and the latter at the end of 1925.

Aircraft in Forest Surveys.

By F. T. Jenkins, B.Sc.F.,*

Associate Member, Canadian Society of Forest Engineers, Member Association of Forest Engineers of Quebec.

Following up my previous article in this magazine on the use of aircraft in making forest surveys it might be of interest to trace the development of aerial mapping. I regret very much that I have not been able to get any more than a general outline of sketching activities in Quebec, but from what information I have the work was started and developed by Ontario and Quebec about the same time by the same method of procedure, and the total area mapped in each Province was approximately the same.

Probably the most outstanding forester in the development of the sketching method in Quebec was a member of the Association of the Forest Engineers of Quebec, the late Mr. Landry. The most unfortunate accident which ended Mr. Landry's career last summer took away a pioneer in the use of aircraft in forest surveys. His life was given for the advancement of the science of forestry. All foresters bow to his memory, and particularly those who have been connected with the same branch of work, and understood the inevitable difficulties that must be faced by one introducing new ideas.

In the following outline of this work in Ontario, I have traced the development from the first very rough sketching, to the present stage, when ground checking has proven that aerial mapping of forest types is accurate enough for most forest survey work.

In 1920 some experiments in forest sketching by air were made in Northern Ontario by Mr. Roland D. Craig, of the Commission of Conservation. In 1921, serious thought was given to mapping large areas by the Ontario Government, and in May work was commenced in Ontario, in the Western end of the Province with a main base at Sioux Lookout, and sub-bases at Minaki and Allenwater. The first flight served to show that broad forest types could be sketched in approximately correct, and a general knowledge of large areas could be gained very quickly and cheaply by the use of aircraft by foresters. The first maps made were of a general character, only large waterways being mapped and large average timber types shown.

As the season progressed a series of landings were made and many sample plots laid out in the various types with the result that the foresters were able to cut the general types up into more detailed types as time went on. In order to locate these types, it was necessary to map in the smaller lakes and waterways.

Ground photographs and oblique photographs were taken of each sample plot. Many miles of vertical photographs were also taken, with changes of types *en route* noted by the observer, for later reference. The area covered during the summer was some 10,000 square miles of mostly unexplored country between the C.N.R. and Lake St. Joseph on the Albany River. The flying was done by the Air Board; the sketching by Mr. R. N. Johnston and the writer. The season's work had been successful, and the possibilities of aircraft in Forestry work were apparent to all. Though there had been plenty of hard work for all concerned, there was a lighter side also. One humourous incident occurs to me.

The pilot, mechanic and the writer had set out to do three hours' sketching at 6 a.m. before breakfast. On returning, the engine cut off without warning about 12 miles from the railway. By skilful manœuvring the pilot put into a very small lake. The bus was secured to the shore and the mechanic left to look after it. The pilot and myself set out for the railway through an almost impenetrable burn. It was a blistering hot day in June with millions of flies about. We reached the railway at 5 p.m. and communicated with the air station. The following day we got the plane back safely. The pilot, however, had been so badly bitten by black flies that his face was poisoned and ceased to resemble a face any longer. A reporter, having got wind of something amiss, dropped in to camp, and grasped the two significant facts—forced landing and black flies. A week later we received a clipping from a prominent Toronto newspaper to this effect:—

"Black Flies Force Plane to Land."

"While flying on a aerial sketching patrol, Capt. Boyd, and crew, ran into a dense cloud of flies and was forced to land. He was so badly bitten that he was confined to his bed

* *Canadian Forest and Outdoors.*

for three days. The black flies are reported to be the worst in years."

We have seen many moving pictures of north country, but nothing quite so exciting as this.

In 1922 it was decided to co-ordinate ground forest survey work with aerial sketching of types. An area of 13,500 square miles draining into James Bay, much of it unmapped and unexplored, was outlined to be mapped by air and cruised on the ground. The main flying base was at Remi Lake, with sub-bases at Moose Factory, Pierre Lake, and an unnamed interior lake. The flying was done by Laurentide Air Service Limited; sketching by Mr. J. S. MacFarlane and the writer. In this district, the existing topographical maps were very poor, with established points far apart and great areas between, totally unmapped. These conditions made it difficult to map in waterways. The types were, for the most part, large with extensive areas of muskeg and scrubby spruce in the north and some very large burns. The number of tree species was limited. These factors made type mapping comparatively simple. The maps used were two miles to the inch, mounted on beaver-board, each covering an area of about 800 square miles.

The method used for interior unmapped areas was to work out from the mapped areas, on all sides, doing a block of 800 square miles at a time, and gradually closing in on the centre. In this way, there was always a mapped area adjacent to the unmapped, and in closing in from four sides any error in over-estimating the width of a block and carrying it in too far to the centre could be seen when closing in from the opposite side, and the block in error adjusted to its proper proportions, and the whole checked over. The boundaries of the block were determined by estimating ground distance, and by sighting and lining in on two or more points.

It was in this phase of the work that the Vickers machines showed to advantage over the H. S. 2 L. They were able to attain a height of 8,000′ to 13,000′ without trouble. At this height the whole country could be identified for 30 miles around, and it was possible to get a number of points to "line in" on. The H.S. 2 L. with a useful ceiling of only 5,000′ gave the observer very much fewer points to work on.

To get an estimate on commercial timber, ground parties followed the main rivers, using our air map as a guide. There were also two ground parties used for estimating interior isolated areas of commercial timber. These were flown in to lakes adjacent to the area to be cruised, and transferred from place to place by air. In this way much time and money were saved, and it was possible to make a forest reconnaissance of such a large tract.

In 1923, the area done was 7,500 square miles. The topographical mapping was easier, but the forest types of much higher value and made up of more species. The typing was more intensive. There were two distinct operations, The Nipigon Forest Survey, and the Mississagi. In the Nipigon Reserve the method used was very similar to that used in James Bay Survey, but the original map was comparatively good, and at no time had we to commence on a block with nothing showing on the map to start with.

The typing was more intensive than James Bay Survey, on account of the higher value of the timber as a whole, and the greater number of known points. The timber was, however, disappointing, there being large areas of very rocky country, supporting only scrubby trees. The Mississagi Reserve offered a field for even more intensive work on account of the greater value of its timber, and still more definite guiding and checking points. For the first time in my experience we had township lines, in places, to follow, and they were a great assistance, when visible, and increased the accuracy of the work.

The work was done by townships. The first thing was to locate the lines and follow them around, checking in the lakes and streams shown as crossing the line, and ascertaining which of the several lakes on the line was the one and only one shown as crossing the line on the map. The shape of the surveyor's lake is generally round, so that doesn't help. When this was done the waterways were joined up and all interior lakes placed. The typing followed, and particular attention was paid to the white pine areas. I might say, in passing, that white pine was easily distinguished from other species. It has a distinctive colour, and crown shape, but the feature that helped most was its height, which brought the crowns well above all other species.

The boundaries of types stand out prominently from the air, and there is no trouble in following their sinuous outlines. A glance at oblique photographs taken from the air give a fair idea of the contrast between two types. These merely show black and white. Imagine the contrast when the types show colour! The main question now is—

"Can they be mapped correctly enough to be any use?"

My answere is "Yes". But the only way that can be proven is where a ground party has checked over an air map.

For an example, I selected a portion of the Mississagi Reserve which was mapped by air and later cruised. I think that it is a fair sample of the air work, and that it received a fair check on the ground by a party composed of six foresters, including myself, all anxious to find the real value of air mapping. I have two maps, one showing the map section as it was before being mapped from the air and one after. A comparison of the two demonstrates that an air type map is essentially the same as a ground type map in form, and accurate enought to substitute typing on the ground. In addition I claim these advantages over the average ground type map unless made from a very intensive cruise.

(1) More lakes on a map.
(2) The lakes have truer shape.
(3) The boundaries of the types are truer to form.
(4) Speed in production.

In this particular case the advantages of having the map made before the cruising party entered the country are evident when you compare the two maps. On the original map there was no definite water route, into the area. On the finished map there was a detailed route, all types and lakes. We were able to follow this route as shown on the air map and place our strips so that they would avoid as many lakes as possible, and thus ensure getting in a longer strip. There was no time wasted running through burn except for reproduction studies, unless there was an area of timber at the far side, white pine in centre of a large burn. Thus time and expense were saved in the ground work.

The accuracy of the air typing was satisfactory. In plotting the field strips on the map later it was found that the ground and air types tallied so closely that the air map could be left unaltered.

The advantage of having a type map of the forest before cruising, is, indeed not a hypothesis. In Sweden, where the practice of forestry is in advanced stage, it is common parctice to send out regular forest survey parties to prepare a type map first. The cruise follows as a separate operation. But the forest type map can be produced by the use of aircraft preliminary to a cruise, at a fraction of the cost of doing it on the ground.

Therefore aircraft have a definite place in forest surveys.

Attention is drawn by a representative of the Federation of British Industries to an important point in connection with Italian trade, namely that for the first time in history the balance of import and export trade between Italy and Germany has worked out in favour of the former country. According to Italian statistics just issued, for the first three months of the current year imports from Germany into Italy amounted to 300 million lire, whereas Italy exported to Germany a total of 378 milllon lire. This increase is due not only to the exportation of agricultural products into Germany but also to the ever increasing exports of industrail products, among which the principal articles have been linen yarns, cotton and woolen yarn, electrotechnical products, etc., showing that Italian exporters are in a position to face the compitition of German industry. The best evidence as to the decline of the German bid for the Italian market was seen at the recent Padua Sample Fair, where the goods exported were so overwhelmingly Italian that apart from motor-cycles, pianos, toys, gas stoves and office equipment, foreign-manufactured articles were unnoticeable.

Green manuring is the practice by which green stuff harvested from the field is ploughed in. Any sort of quick growing nitrogen-collecting crop ploughed in is a substitute for farm yard manure. It is far cheaper especially for those who do not get farm yard manure and where the cost of carting is a heavy item.

The advantages of green manuring are given below:—

1. The soil gets humus & thereby gets rich.
2. Heavy soil is made lighter and warmer.
3. Light soil becomes retentive.
4. Both heavy as well as light soil reach rich medium soil.
5. The surface of the soil is kept moist and cool.
6. Rich stores of nitrogen are collected.
7. Weeds are smothered down.
8. The activity of soil bacteria is increased.

For green manure should be chosen plants which collect nitrogen, have deep roots, grow quickly and produce an abundance of plant substance in the shortest possible time. The nitrogen-collecting plants used for green manuring are san, berseem, clover, lucerne, guar, choula etc.

Printing: Yesterday, To-day and To-morrow.

By R. E. Barnett, B.Sc., A.R.C.S.,

Principal of the City of Leeds Technical School.

There was a time, about the 16th century, when letterpress printing was truly an art. The printer cut and cast his own types, and expressed his soul in the design of their faces as well as in their arrangement on the printed page.

So, too, in the illustrations that might supplement the letterpress, the craftsman was often also the artist. Given the necessary skill, acquired only by long and arduous practice, he could develop his ideas of the subject matter direct on the boxwood surface. Or in old-time lithography, by the cunning of his hand he would express himself on the stone better than could be done by any mere copyist.

These old-time processes depended for success upon the native talent of the craftsman, developed by long apprenticeship and steady endeavour. He would learn much from his fellow-workers and their successes and failures, but there could be little scope for teaching in the ordinary sense of the word, even if there were any teachers. Technical education was then unnecessary and impossible.

To-day, the position is entirely different. The intervening centuries have brought about a revolution in printing. Except, perhaps, in a few small workshops catering for a very limited demand, it is no longer an art or craft, although some of its workers, particularly those of the passing generation, may still flatter themselves with the pleasing idea. Printing to-day is a highly organized industry, utilizing every resource of mechanical invention and of chemical and physical science.

The result is that there is less scope for native talent but more for cultivated brains; less need for self-acquired skill but more for instructed knowledge; a smaller call for long apprenticeship, but a greater one for thorough technical training.

The resources of mechanical invention have been applied to every branch of the industry. The dexterity of the compositor, handling his small types with speed and accuracy, is fast being superseded by the ingenuity of the type-setting machine. Its operation calls only for the simplest manual movements, but these should be directed by a brain equipped with a thorough understandings of the complex mechanism and all its possibilities, especially where the operator has to rely on himself without the assistance of a special mechanic.

The letterpress printing machines of to-day are much more elaborate and efficient than those of a few years ago. Being more accurately made, they do not demand from the machineman so much skill and experience to ensure uniformly good results. But being more complicated and more finely built, they call for more mechanical knowledge and more intelligence if full advantage is to be taken of their potentialities. Even the dexterity of the feeder, which meant so much in output, is becoming superfluous through the rapid growth of automatic appliances. But these, be it noted, make a further demand on the knowledge and mechanical sense of the machineman if they are to be kept working efficiently.

In illustration work, still more progress is to be noted. Half-tone process blocks, both monochrome and three colour, whose rapid improvement at the beginning of this century threatened to displace lithography as they had previously displaced wood-cuts, are in their turn being threatened by the growth of direct photo-litho. methods. This revival of lithography has been materially assisted in recent years by the offset press, which has given litho-printers the speed and flexibility they formerly lacked.

The battle between the older half-tone process and the direct photo-litho. methods, both assisted by rubber offset printing, has been complicated by the intrusion of photogravure. The last-named, which has effected a striking revolution in newspaper illustration, particularly across the Atlantic, requires costly methods and complex machines of high accuracy. Who can say what will be the prevailing process to-morrow?

The fundamental factor in all these modern illustration processes is PHOTOGRAPHY. This is not the photography of the snap-shot or of the professional studio, but photography as a branch of applied science.

The advanced worker engaged in the production of photographic plates for these processes may have to depend on microscopic

methods for examining his screens, on spectroscopy for testing his colour-filters, on optical and electrical instruments for regulating his illumination, and on chemistry for his sensitising and other solutions. In a word, it is *science* all the time.

The combination of the camera with the colour-filter killed chromo-lithography. By the end of last century the skill of the litho. artist, due to his natural talent, art training, and arduous endeavour, had brought the lithographic reproduction of coloured originals to a high degree of perfection, but the process was slow and costly, often involving a large number of successive printings. The photographic analysis of the same coloured original into yellow, red, and blue, enabled a similar result to be reached in three printings. The worker needed little art or skill, but much knowledge and care in using the accurate appliances provided. Perfection was only slowly attained with the help of the tinctorial chemist who made possible panchromatic plates and correct colour-filters. Once again science had triumphed in industry.

Mechanical apparatus of the utmost refinement has been applied to the photographic process to enable any number of copies of a small design, or any number of "repeats" forming a single large design, to be reproduced on one plate so accurately positioned that a series of such plates for different colours can be printed successively in perfect register. The art and skill of the litho. transferrer is hopelessly beaten by the photographic machine.

So much for the printing of to-day; what of to-morrow?

I do not pose as a prophet, so prefer to quote opinions expressed in public in 1923 by men with more vision than I pretend to. One speaker declared that the machinery for photo-composing was being so steadily improved that probably in five years' time the old type-setting method would begin to be a decaying art. Already work was being turned out which in alignment, sharpness of outline, and other respects, customers frankly preferred to anything done by the type-setter.

Another said that in the printing industry there were growing up new methods of dealing with type in the production of newspapers and other publications, by which type would be produced on a radically different basis from that hitherto adopted. He referred to the extension of the "photogravure" system of type-reproduction.

There is talk of the electrical light-sensitivity of the element selenium being utilized in appliances for modern printing.

What is the moral of all this?

Surely it is that the Printing Industry needs more Technical Education to-day, and will need still more of it to-morrow.

The apprentice needs it because the work is growing so complex and difficult that it cannot be grasped completely by casually "picking-it-up," as is usually done during apprenticeship. The journeyman needs it because of the variety of methods and appliances encountered to-day in different shops, and still more because of the new inventions he may meet to-morrow.

Much greater than both of these is the need of the young man who expects to fill an administrative or other leading position in a printing works. It is not enough for him to study a single branch, as he conveniently could in evening classes. He needs to gain a thorough grasp of all the processes, as well as of the chemical, physical, and mechanical science underlying the same. He will then be competent, not merely to manage an establishment conducted on modern lines to-day, but also to guide its future progress amidst all the inventions that may be encountered to-morrow.

A full-time Day Course of at least two years in the Leeds Technical School Printing Department will give him the kind of training required. If he is more ambitious, he would do well to take advantage of the combined Four-Year Degree Course which has been arranged in co-operation with the University of Leeds in the interests of the Printing Industry.

All nitrate firms in Chile are producers or possible producers of iodine. Anyone of the larger nitrate plants, writes the United States Consul at Iquique, could produce a sufficient quantity of iodine to supply the entire world, but the combaintion de Yodo restricts the free production of this drug. At present the limited use of iodine prevents any increase in price being made, and with a view to increasing prices the combination has offered prizes for the discovery of new uses for it. In 1913 the exports of iodine from Chile were valued at 5,134,400 pesos (1 peso=1s. 6d.), incrasing in 1916 to 21,627,936 pesos, representing the largest amount over exported in a single year. After the War-time demand had been supplied, the value of the export declined, and in 1921 the total export of iodine was 9,991,132 pesos.

Economic Notes.

The recent debate in the House of Lords serve to emphasize certain points. Lord Balfour summed up Lord Midleton's argument in a sentence that should be printed in large letters in every factory, workshop, and office in the kingdom. He said:—"My noble friend's argument was quite a simple one. If you cannot produce cheaply enough to induce or compel foreigners to buy your goods, whether they prefer to make them at home under protective duties or not, we must strave." No cheery optimism can diminish the force of that indisputable proposition. However desirable a higher standard of living may be, in the long run, unless we can exchange manufactures of this country for the food and raw materials of other nations, there is no prospect for this country but absolute ruin.

Economic Fallacies.

Unhappily, very little of the methods of conducting foreign commerce is known by the average man, or, indeed, by the average politician. Silly people fondly imagine that what they term the provision of credit—a euphemism for inflation by printing paper money that is not represented by real wealth—will create purchasing power in the home market to so great an extent that foreign sales become unnecessary. They are unable to see the direct relation between national earnings and the average standard of living. They tell labour that great victories have been won, when all that has happened is that sheltered trades have obtained more than their rightful share and in the process prices have been raised and life has been made harder for everyone. The greatest danger that this country has to face is widespread ignorance of simple economic truths.

Burden of Taxation.

The idea that the imposition of taxation, particularly in the form of income-tax and death duties, merely serves to equalize the distribution of wealth and does not affect that class in the community which does not pay it directly, is, as Lord Balfour showed, a complete fallacy. Lord Parmoor argued that the taxation of individuals, so long as the receipts were expended in this country by other individuals, was not the same burden as an expenditure, but Lord Balfour declared that the idea that the manufacturer is not impeded and hampered in his manufacture because he has to pay an immense income-tax is a fallacy of the most serious kind. Lord Hunsdon and Lord Emmott brought out quite clearly that only by the accumulation of surplus income can funds be found for investments in foreign enterprize which lead to export orders being placed in this country.

Cotton-growing in Italian Colonies.

Commendatore Tarlarini has submitted a report on cotton-growing to the Italian Cotton Association. In the course of this he refers to the measures taken by Great Britain with a view to developing the cultivation of cotton in her Dominions. He maintains that similar action could not be undertaken by Italy because of the lack of suitable large tracts of territory in Eritrea and Italian Somaliland, and the impossibility of finding the necessary number of workers.

While not depreciating the value of the results obtained in both these colonies, and particularly in Somaliland, Commendatore Tarlarini is of opinion that they will never produce any material portion of the cotton needed for the Italian spinning industry. He suggests that it would be wiser to promote cotton cultivation schemes on a big scale in Brazil, using Italian labour. These could eventually be associated with the schemes financed by English capital. A still better alternative would be the securing the necessary land, with Government aid, for independent enterprizes.

New Flax-Pulling Machine.

A new flax-pulling machine was exhibited at an agricultural show recently held at Quesnoy-sur-Deule in the Lille district (France). It somewhat recembles the model which was adjudged the best at the competition for flax-pulling machines organized last year at Wambrechies, except that it works on three rows of flax simultaneously and deposits the bunches gathered upon the ground in perfect alignment. Though the first trials appear to have proved satisfactory no definite opinion can yet be expressed as to the practical value of this machine.

There has been a greater demand for flax recently, but only small dealings have taken place. The linen goods market remains quiet, and prices are firm.

All nations are suffering from a surplus of politics and a shortage of production.—*Lord Leverhulme.*

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Cotton in India.

By His Excellency Lord Reading. *

It gives me the greatest pleasure to take part in this inaugural ceremony to-day for several reasons. In the first place I am enabled to express my high appreciation of the value of technological and other forms of research connected with cotton with which this ceremony is primarily concerned; and in addition there is the wider subject of the activities of the Central Indian Cotton Committee and the general question of the cotton industry in India as a whole in which I take the warmest interest and to some aspects of which I desire to draw attention.

The Indian Central Cotton Committee lost no time after their formation in carrying out the recommendations of the Special Indian Cotton Committee of 1919 regarding the appointment of a technologist and the erection and equipment of a laboratory and experimental weaving installation in which accurate tests can be made and correct judgment concerning the value of varieties of cotton sent for test can be reached. The spinning test represents the main avenue to all technological research in cotton; and the experimental spinning plant, erected here, now enables the most satisfactory method of ascertaining the value of cotton by actual spinning test to be carried out under expert control. These tests will be supplemented by other scientific processes directed towards classifying the properties of various types of Indian cottons; and these results will be co-related with the results from spinning tests. Properties of fibre and yarn are also to be investigated. For some of these processes a laboratory will be required where physical, chemical and microscopical examinations can be conducted. A building has been designed and begun for these purposes; but meanwhile thanks to the kindness of the Trustees of Victoria Jubilee Technical Institution, the actual laboratory tests have not had to wait upon the completion of the building and are already being carried out in the premises of the Institution. I need not emphasize the great value of this work. Its effect in assisting in the selection of the most suitable varieties of Cotton for growing and in placing facts before the producers and consumers of first importance in the marketing of cottons cannot be over-estimated. I heartily congratulate all those concerned in the successful start made in technological research work here and I also felicitate the public interested in cotton on the possession of an Institution designed for scientific tests which, I am confident, will be of the greatest value in the history of this most important industry.

It may appear in Bombay unnecessary to dwell upon the wider aspects of the work of which the experimental spinning plant is only a part, though a very important part; for Bombay is the great cotton centre. Not only does the Presidency grow large areas of cotton; but much of the prosperity of Bombay City itself is bound up with the cotton industry and large numbers of persons are

* Speech delivered at Bombay on 3rd December, 1924.

directly concerned with the purchase, marketing and export of cotton or with the spinning and manufacture of cotton cloth and yarn. The question of cotton supply has accordingly a direct reaction on the general conditions of the financial, commercial and industrial prosperity of this city ; but this lively interest is not universal outside Bombay ; and perhaps in some quarters in India men's minds are apt to dwell in some perplexity on problems of financial stringency and of needs for social, administrative and economic improvements of various kinds without realizing, as keenly as I do and as many, I feel sure, in Bombay also do, that the cure for many of these difficulties and defects lies in increase and improvement of production. The effect of increased production in adding directly and indirectly to State revenues and in enhancing the prosperity of the producer, the manufacturer and the industrial labourers will, I am confident, show the way of escape from many of those difficulties and problems for which at present no easy solution can be found.

One of the more obvious means of improving production in India lies in concentration on the improvement of the cotton crop. India is vitally interested in cotton. Many parts of the world can produce food-stuffs ; but the favoured areas which have conditions suitable for the production of cotton lints for use for clothing and numerous other purposes are limited. India, however, has the priceless heritage of a climate and soil favourable for cotton production, and it would be madness to neglect or squander that fair inheritance or to fail to use every effort to improve it by wise stewardship. India consumes a large quantity of cotton goods. It has an extensive cotton export trade. It is keenly interested in the manufacture of cotton goods both through well-established and efficient spinning mills in which much capital has been invested and which give employment to large numbers of workers, and through widespread "cottage industries" which produce large quantities of hand-woven yarn and cloth.

It must be remembered that India is not only the largest cotton-producing country in the British Empire, but is also the second largest cotton-producing country in the world. Moreover America, the largest producer, is itself now yearly absorbing to an increasing extent its own produce. For this reason, not only in the interests of India itself, but in the interests of the Empire-supply and world-supply the cotton industry of India holds a most important position ; and India offers the greatest possibilities for a considerable increase in the supply of cotton in the near future.

The possibilities of increase in India lie in various directions. There is the question of the expansion of the area under cotton, which is largely connected with the extension and improvement of irrigation and the exploitation of new areas suitable for cotton cultivation. Another aspect of the case is the possibility of securing a better average yield per acre in existing cotton areas by selection and stabilization of the better varieties of cotton or by the introduction of new kinds. There is also the question of the prevention and cure of diseases and pests to which the crop is peculiarly liable and which cause a considerable volume of loss each year. There is also need to study the export and mill demand more closely and to aim at improvements in the production and marketing of the desired varieties in commercial demand for the cotton trade with the mills in India or other countries. This includes the prevention of adulteration, deterioration and admixture and the stabilization of the supply of various types in demand in various markets. As an illustration of the great scope for improvement I may note that the Cotton Committee in 1919 stated in their report that the average yield of Indian cotton was only 85 pounds of lint to the acre as compared with 200 pounds in America ; and that there was in addition defective marketing resulting in losses for Indian cotton of 10 per cent more in the blow room as compared with American and Egyptian cottons. The Committee also found that before the War Lancashire, the best available cotton market, took little Indian cotton owing to the short supplies from India of staple cotton approximating the commercial inch standard.

The time at my disposal does not permit me to do more than indicate in the broadest manner the great importance of the field

open to the labours of the Central Indian Cotton Committee, the immense potential value of the work on which they are engaged and the numerous problems, of which I have only enumerated a few salient points, remaining to be solved by their efforts and advice; but if in my brief sketch I have been able to communicate even in some degree the keen interest which I feel in their work and my deep appreciation of the importance of their labours in the interests of the progress of India and the prosperity and welfare of the people of India, I shall have been amply rewarded.

The Central Indian Cotton Committee has been set up as a result of the report of the Special Cotton Committee of 1919. Broadly speaking, apart from formal activities, the Committee is a central body charged with the promotion of all measures which will tend to further the improvement of the cotton-growing industry in India. The *personnel* consists of a fully representative body including the Agricultural Adviser of the Government of India as President and as members the Directors of Agriculture and other experts of the Agricultural Department in the cotton-growing Provinces, the Director-General of Commercial Intelligence, the Representatives of the Chambers of Commerce and Commercial Associations, Commercial Representatives specially nominated by the Local Governments, Representatives of the Co-operative Credit Societies, of the cotton growers and of the Indian States. The representative character of the Committee specially qualifies it to advise the Central and Provincial Governments in all matters concerning the industry and affords a common ground on which all sections of the cotton trade, the producers, the traders, the manufacturers and the agricultural and other experts of the Central and Local Governments can meet and discuss difficulties and take joint action to promote objects which are alike the concern of the Government of India, the Local Governments and the Indian States.

With the passing of the Cotton Cess Act, the Cotton Transport Act, and the active consideration of a Bill for the regulation of gins and presses, the machinery for extending the operations of the Committee is in the process of being perfected. The Committee has already excellent achievements to its credit and great results are to be expected from the schemes of the Committee for the promotion of agricultural and technological research. The Committee can rely on my warm sympathy and on the support of the Member of my Council, Sir Narasimha Sarma, in their operations; and I know that the Ministers-in-Charge of Agriculture in the cotton-growing Provinces keep in very close touch with their work. I commend the work of the Committee to the public generally because I am convinced that it is of primary importance to the welfare of India and to the prosperity of her people.

The prospects of a change in British commercial policy are being followed with close interest in France and "Les Echos" declares that it would be in the best interests of France to conclude as soon as possible a commercial treaty with England in order to reserve for French products favourable treatment on the English market. After indicating the conventions on which the present commercial relations between the two countries rest, "Les Echos" says that Great Britain has never ceased to protest against the present régime, which lacks stability. It would therefore probably be good policy, on the eve of a change of system in England, to secure more stable and durable bases for the trade relations of the two countries.

From the most common plants such as reeds, rushes, flax, sugarcane, jute and bamboo, etc., used in making the cellulose, from which paper is manufactured, German scientists claim to have solved the print paper problem, providing a comparatively cheap substitute for the world's diminishing supply of wood pulp. The actual manufacture of the paper requires two hours only and is far cheaper than the wood pulp process. It is claimed that the price of the new paper will be 60 per cent less than the present price of wood pulp paper. Even card-boards are prepared by the new process. Despatches from Berlin say that more than 50,000 inner soles have been manufactured from these common plants.

The Co-operative Movement.

By Sir Leslie Wilson. *

It is a great pleasure to me to come here this morning to inaugurate the 13th meeting of the Bombay Central Co-operative Conference. The movement is one with which I have very great sympathy, but before making any remarks about the movement as such, I should like to say a few words on the subject of co-operation, in its wider sense.

It is undoubtedly a fact that Co-operation is the bas s of practically all useful endeavour —and this Co-operative movement has done more than anything else to give to the inhabitants of the towns and villages in the Presidency a real sense of responsiblity, and has enabled them to realize how much they can do by self-reliance and mutual trust.

Co-operation is constructive and is progressive in every way. This movement has shown, more clearly perhaps than any other, the great results which can be obtained by putting into the hands of those primarily interested in agricu.ture, the opportunity of assisting themselves and their fellow-men by accepting the responsib.lity of advancing money for essential agricultural purposes; and in few cases indeed have those in charge of Co-operative Vi.age Societies found that the confidence they have placed in their fellow-villagers has been displaced.

I have on several occasions discussed the whole question with the Registrar, and I should like here to pay my tribute to the great services Mr. Madan is rendering to the movement. He has given me instances in which quite small villages have built up on their own initiative comparatively large reserves of money, available for assistance to the ryots of their village, by efforts entirely due to the personal enthusiasm and enterprise of one or two men in the village in whom their fellow-villagers have complete trust and confidence. There is a great deal in this—for more than would appear from the few words I have spoken. What seems to me to be wanted in this Presidency more than anything else is a feeling of self-reliance, self-confidence and a trust in others among the many instead of among the few. The Co-operative movement affords an opportunity to very many to bring into being those most essential attributes; and when, as is, I am glad to say, the case, the efforts of a few in the villages throughout the Presidency are so successful in proving that there does exist an initiative and sense of responsiblity, this movement, even if it were unsuccessful, which it certainly is not, would have achieved much.

Creditable Achievements.

The Co-operative movement, which has now been in existence for some 20 years, has already to its credit very remarkable achievements. The results so far obtained are most encouraging, and I believe that the movement is now so popular that in many cases cultivators come forward themselves to join Co-operative Societies instead of waiting to be persuaded, as was the case only a few years ago.

The Central Co-operative Institute, of which I am proud to be the President, has now reached the fourth year of its existence. It was clear that a movement which was expanding so rapidly required some central body to co-ordinate its activities, and I think you will agree with me that the Institute has already done much to justify its existence.

One of the most important questions which you will have to consider is that of the Co-operative Societies Bill which has been introduced into the Legislative Council. A very large number of amendments to the Bill have been proposed, and these will all have to come before the Select Committee. The delay which has taken place will probably be found to have been, in the end, of great advantage, for the Conference will now have an opportunity of discussing the provisions of the Bill, and the members of the Select Committee, whom, I am glad to find, you have invited to attend the Conference, will have an opportunity of ascertaining the views of representatives from all parts of the Presidency.

* Speech at the Opening of the Bombay Provincial Co-operative Conference.

I have every hope that, when the Bill again comes before the Council, it will be such as to satisfy all those who have the interests of the Co-operative movement at heart.

I do not wish to go into the detailed activities of the Co-operative movement in this Presidency. There is, however, one point which I should like to mention. When I was recently at Dharwar it was brought to my notice that the procedure for placing at the disposal of agriculturists money advances out of the Tagavi grant was unnecessarily cumbrous, and that the rate of interest which members had to pay was rather heavy. I am glad to say that the whole question has been carefully discussed by the Registrar and the Provincial Bank, and steps have now been taken not only to expedite the disposal of such applications, but also to reduce the rate of interest, so that members of Co-operative Societies will be charged no more than a non-member borrowing directly from Government.

A Cautious Policy.

Reviewing however, as shortly as I can, the progress made by the movement during recent years, I find that in the last 3 or 4 years a cautious policy has been followed, and I think rightly followed, aimed at the consolidation, and improvement of the existing Societies rather than at their multiplication. During the last year, for instance, the total number of Societies showed an increase of only 210. The number could easily have been considerably increased, but it was thought that our energies could more usefully be concentrated on arranging for better supervision of existing Societies, and removing the defects which had grown up rather than at organizing new Societies. Although the increase in the number of Societies was small, the number of members went up by 21,000 and what is really more satisfactory is that the working capital increased from 533 lakhs to 619 lakhs, showing an increase of 16 per cent in one year. When we consider that only 5 years ago the working capital was barely two crores, the fact that it has trebled itself in spite of adverse circumstances during that short period would go to show that the movement has gained very much in public confidence. Another noteworthy feature about this working capital is that nearly 50 per cent of it is the members' own. The working capital in the movement is, as I stated above, now about 6 crores and 19 lakhs. Out of this, it is true, a part, about a crore or crore and a half, advanced by Central Banks to Societies and distributed by them amongst their members, is counted twice over. I find, however, that, out of the 6¼ crores, 2¼ crores represents members' deposits, 75 lakhs their share capital, and 32 lakhs the reserve fund. This increase in the Societies' own capital is undoubtedly a source of considerable strength and stability to the movement, which aims at being eventually entirely self-reliant.

A Source of Anxiety.

One discouraging feature of the working of agricultural societies in recent years has been the growth in overdues. It requires little thought to see that a movement which depends on credit and on the confidence which it inspires in the public, would suffer very seriously if members cannot repay their dues promptly and punctually. The continual growth in the percentage of arrears during recent years has, therefore, become a source of anxiety, although it must be noted that this percentage in our Presidency has always been very much smaller than the percentage prevalent in most of the other major provinces in this country. In 1922, the arrears amounted to 12 per cent of the working capital. This increased to 18 per cent in 1923. Special efforts were, however, made to check this upward tendency, and although the last season was not favourable in several districts, the amount of overdues was reduced, and, with the favourable rains that we have had this year, it is hoped to reduce them still further. It is of course necessary, when the seasons are bad or unfavourable, to grant extensions, but the tendency in some of the societies to grant extensions wholesale, or to take no steps against recalcitrant members, must be checked if the movement is to grow on healthy lines.

With better supervision it is likely, almost certain, that not only will the overdues be considerably reduced, but the general tone and management of societies will improve. We have, in this Presidency, so far followed

a policy of leaving the societies to themselves. So long as the societies follow their rules and bye-laws, there is little, if any, interference in their internal management from outside. Societies' accounts are audited every year by the Government Auditor. They may be visited occasionally by the Registrar or the Assistant Registrar or the Honorary Organizer. There are, however, several societies which do not receive any visit from any outsider, except the Auditor, during the course of the year. It is in these societies that very often slackness and deterioration set in. The question about arranging for supervision was, therefore, very carefully considered by a Committee appointed by this Conference, and acting on its recommendation, steps are being taken for the organization of Supervising Unions, which will appoint well-paid and well-trained Supervisors under the guidance of the Union Committees to inspect societies periodically. I attach very great importance to these measures, for I believe, and I am sure you will agree with me, that unless proper and regular supervision has been provided for, it will not be safe to go on increasing the number of societies, nor can we expect great progress in many of the existing ones. In our Presidency we have limited our official staff almost to the bare minimum required to carry out the duties required under the Act, and the best way, therefore, to provide for the supervision is to organize the societies themselves into Unions for the purpose, so that supervision will be internal, *i.e.*, by the societies themselves, and not from outside. I hope that the Institute and its Branches will pay special attention to the organization of such Supervising Unions during the current year.

One of the industries of India which has shown little or no progress during the past decade is that of paper-making, says the *Daily Gazette* of Karachi. At the present time there are twelve paper mills in India with an authorized capital of 50 lakhs of rupees. Only five of this number, however, are working on up-to-date Western lines, and these are at Titagarh, Kankinara and Raniganj in Bengal, the Upper India Couper Mills at Lucknow, and the Reay Mills at Poona. The aggregate output of these mills is very far below the actual needs of India. Not only is there an urgent need of a greater output from the existing mills but there is a great need of more paper mills to cope with the increasing demand. We understand that the existence of the paper industry depends mainly on the supply of Sabai grass which is not as extensively grown as it might be. For several years past the crops of this particular grass have been quite inadequate to meet the demands of the paper mills. A correspondent suggests that experiments might be tried in Sind with Sabai grass, and if proved successful should be encouraged by the Government. Obviously this is a question for the Agricultural Department to investigate, but the public would welcome some information on the subject, especially as Sind is an agricultural province.

"It has been generally recognized," Mr. Sayer writes in "Agricultural Journal of India," "that the problem of the improvement of the Indian sugar industry is primarily one of increasing the tonnage of sugarcane per acre. ..... Whilst Java produces over 40 tons, Hawaii 41 tons (*i.e.*, the island as a whole, for in Maiu and Oahu the average was as high as 50 and 48 tons (of 2,000 lb.) respectively), and Cuba 20 tons to the acre, over the greater part of Northern India, where by far the largest portion of the total area under cane is grown, the average yield is hardly 300 maunds, or 11 tons to the acre." This means, as the Americans soon found when they went to Cuba to make things hum, that extensive cultivation of sugarcane is impossible if you run your factory to pay and not merely, like some English tramways, to pay out wages to indifferent workers. A factory in Java, again quoting Mr. Sayer, working with 500 tons of cane per day, can be supplied with its raw material for one day's working from twelve acres, whilst a similar factory working in Northern India has to draw on no less than 45 acres. This is all right perhaps for one day, but think of even fourteen days' running, with Java having to clear and cart only from 168 acres against 630 acres in Northern India.

Life and Its Mechanism.

By Sir J. C. Bose, F.R.S.*

The fuller investigation of the nascent science which includes both Life and Non-Life has been the object of the foundation of the Institute, seven years ago. These inquiries are more extensive than those customary either among physicists or physiologists, since demanding interests and aptitudes hitherto divided among them. It has been my aspiration to revive the great traditions of our ancient seats of learning and to win recognition, that the world's advance in knowledge would be incomplete without India's contributions. I also hoped that the results of special training given, and the work achieved in the Institute, would afford ample proof of the capacity for discovery and great power of invention latent amongst the people and thus counteract the paralysis of all efforts, for the scientific utilization of the vast and undeveloped resources of the country.

Researches and Inventions.

Extension of knowledge can only be secured by new inventions for exploring regions that had been closed to us through the imperfection of our senses. More speculation, unsupported by demonstrated facts, has little use in the advance of exact science. The special difficulties which I had repeatedly to encounter and overcome, arose from wrong speculations held specially in regard to the functioning of plant life. The account of very large number of investigations carried out in the Institute will be found fully described in nine large volumes published by Messrs. Longmans Green and Co. I can only give a short account of some of the most important discoveries and inventions made in my laboratory. In Physics, the shortest electric waves to bridge over the gulf between visible and invisible lights, were produced here more than thirty years ago; this was followed by accurate investigations on the optical properties of electric radiation. The invention of galena receiver rendered possible the reception of wireless message from the longest distance. The discovery of the Response of Inorganic Matter was announced in 1900 before the International Science Congress in Paris. The most astonishing manifestation of inorganic response is its exaltation under stimulants and abolition under poison. The Radiograph enables continuous and automatic record of fluctuating daylight every minute throughout the day. Microscopic method of magnification is limited by the wave length of light. But no such limit exists in the Magnetic method which I devised by which magnification can easily be produced exceeding 50 million times, thus opening new and vast fields of exploration in the realm of the invisible. The Micro-radiometer measures the energy of every ray in the spectrum, and its relative absorption by the atmosphere. The Resonant Recorder devised on a new principle, gives direct record of time as short as a thousandth part of a second. In Chemistry a new method has been elaborated for the continuous record of the rate of chemical action, and the change in the rate under different conditions.

The reaction of living matter is infinitely more complex than that of inorganic matter, and a very large number of instruments of extreme delicacy and sensitiveness had to be specially devised for exploring the inner activities of life. Long and most painstaking researches had to be pursued with these devices before the great generalization of fundamental unity of life mechanism of plant and animal could be firmly established. Investigation of the simpler life of plants thus held out the possibility of explaining the highly complex and intricate mechanism of animal life.

One cannot give a direct answer to this question without being a plant. The problem may, however, be indirectly approached in two different ways, (1) through philosophic speculation and (2) through scientific investigation on the behaviour of plants subjected to shocks from outside. In regard to the

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* Address delivered at the Anniversary Meeting of the Bose Institute, 29th November 1924.

metaphysical speculation, I had M. Borsson, the foremost philosopher among my audience in Paris. In his published works he says, "It by no means follows that a brain is indispensable to consciousness. The lower we go in the animal series, the more the nerve centres are simplified and separate from one another. If then at the top of the scale of the living beings, consciousness is attached to very complicated nervous centres, must we not suppose that it accompanies the nervous system down to its whole descent ?" Consciousness and sensation are thus regarded as inseparably associated with nervous system and nervous reaction. If this be so, then my recent discoveries prove beyond a shadow of doubt that many plants possess not merely a rudimentary, but a highly elaborated nervous system. I have, however, nothing to do with metaphysical speculations but with the behaviour of plants, and their muscular and nervous mechanisms. I have been able to show that the mechanics of the motile organ of the plant are in every way similar to those of the muscular mechanism in the animal that various poisons throw out of gear the motor organs of the animal and the plant in an identical manner. When the plant is subjected to the action of poison or to scalding in a heating bath, a violent death spasm is found to occur at the exact moment of death. In regard to the nervous system I have been able to localize the nerve strand in plants, and trace the fibres which ennervate the motor organ. I have been able to paralyse the plant-nerve by the action of various narcotics or render them extraordinarily irritable by the action of specific drugs. It was after the successful invention of instruments of very high delicacy and precision that these very significant discoveries could be made. The absence of exact method inquiry led to the speculation that the movement of plants in response to transmitted excitation was caused by water-movement. This theory, as grotesque as it is unfounded, was propounded by certain German Physiologists some thirty years ago, and has been slavishly followed ever since. Professor Kokotsu of the Imperial University of Japan has been the first to follow my methods, and fully confirm some of my important results. The new methods are now being pursued in German Universities, and German editions of my works will shortly be published in Berlin. In Paris also, Gauthier-Villars, the eminent scientific publishers, are bringing out French editions to meet the demand in Latin countries.

Carbon Assimilation in Plants.

Everything living, animal or plant, is in incessant movement, external or internal. No movement is however possible in an engine without combustion. Something must burn to produce motion, and this internal combustion in a living machine is known as respiration. The opposite process of building up of assimilation of food and accumulation of energy is therefore necessary for making up the loss. All creatures are incessantly engaged in this struggle for food ; carnivores live on herbivores, who in their turn subsist on living plants. In the experiment depicted in the luminous disc on the screen, a fish apparently of gigantic proportions, is seen to attack another writhing creature. The struggling prey is being devoured slowly but relentlessly.

In the case just shown, it is sight that guides the hunter to its prey. As we go down to the lowest scale in animal life, the amoeba sends out its pseudopedia, actuated by the chemical effluvium given out by the food material. The fact that all physiological actions are to be traced ultimately to physico-chemical forces, is illustrated by the striking experiment shown, where a piece of inorganic matter is seen to dash forward repeatedly and with extraordinary violence, to engulf another piece of matter within itself. Nothing could be more vividly life-like than this extraordinary spectacle.

We next come to the plant which by virtue of its green colouring matter absorbs both solar energy and carbon dioxide and builds up organic matter charged with latent energy the process being known as photosynthesis To stand before a coal fire is to bask in the sun which shone millions of years ago. The most important source of food for the plant is carbonic acid present in air or dissolved in water. It is the simplest type of assimilation, and its study is of supreme interest The difficulties of investigation are, however extremely great, since the gaseous carboni

acid, and the process of its assimilation are all invisible. For solving the problem it is necessary to make the phenomena in the realm of the invisible, visible,—to make the plant itself write down in a visible script its assimilative activity, and the changes in that activity unders hocks and changes from outside.

Automatic Recorder for Carbon Assimilation.

In normal photosynthesis a certain volume of carbonic acid is absorbed and an equal volume of oxygen evolved. The assimilative activity may, therefore, be measured from the rate of absorption of carbonic acid or of evolution of oxygen. The method generally employed is the estimation of the absorption of carbonic acid by prolonged chemical analysis, the method being neither sensitive nor highly accurate. The evolution of oxygen by water-plants is a mere sensitive indication of photosynthesis, but numerous sources of error had stood in the way of its employment in accurate measurements. These difficulties have been completely removed by the new method which I devised, by which the evolution of equal volume of pure oxygen becomes automatically recorded. The new method and its applications will be found fully described in my work on Photosynthesis, recently published by Longmans. The photosynthetic reocrder is seen at work; the record of successive evolution of equal volumes of oxygen is obtained by the electric device which actuates the electro-magnetic writer to inscribe successive dots on a revolving drum. It also gives independent signals. It is so extremely sensitive that it is possible to measure the photosynthetic deposit of carbohydrate as a millionth of a gram. The extreme sensitiveness and accuracy of this new method has led to the discovery of several important phenomena which otherwise would have been impossible.

It is thus found that the assimilating activity is at its maximum at about 1 p.m. It is very curious that the plant should be most hungry at our lunch time! Another striking result is the effect of irritation or shock; the plant is "off feed" as the result of irritation. The moral is obvious; we should forget all worries at meal time. It is still better to have half an hour's quiet rest before meals.

Efficiency of Green Plants.

The efficiency of green plants has, however, been regarded as extremely low, being about 0.6 per cent. This subject, however, required re-investigation by means of my more accurate and sensitive appliances. The efficiency thus found is fairly high, being half that of an ordinary steam-engine. As the sources of power, at present available, are becoming depleted, the problem will have to be faced sooner or later of storage and utilization of solar energy. The efficiency of the chlorophyl mechanism encourages the hope that a chemical trap will be devised for storing and utilizing the energy of the sun.

In this investigation I came across the very striking result that certain substances which in large doses act as poisons, produce most remarkable stimulation in assimilatory activity, when given in extremely minute quantities. I have before you the plant in which owing to internal causes the power of assimilation has become almost extinct. I add the minutest trace of the poison and you note how magical is the effect, the power of assimilation being enhanced to an extraordinary degree. The dilution employed must be infinitesimal, such as one part in a billion; this produces an increase of activity of more than 200 per cent. The activity, however, declines when the strength is raised above a critical dose.

The Future.

After years of persistent efforts the hope cherished about the Institute and its activities has been amply fulfilled. It has won full recognition as an important centre where some of the most difficult problems in science have been pursued with very great success. Post-graduate scholars from foreign Universities have applied for admission for receiving a training in the new methods of investigation originated at the Institute. Important developments of work in various new directions are at present held in abeyance on account of the limitation of its present resources. The discoveries made here are not only of much scientific importance but of great practical utility in the immediate future. This was

found in the invention, made many years ago, of one of the most sensitive receivers for wireless communication. The recent discoveries of similar action of drugs on plant and on animal tissues, have been regarded as of much promise for the advance of scientific Medicine. The discoveries on the laws of growth hold out great possibilities in increasing growth in plants on which the food supply of the world depends. The invention of numerous instruments of extraordinary sensitiveness have opened out new fields for scientific exploration. These instruments, which could not even be duplicated in any other part of the world, were all made by Indian merchanicians, whose latent power has been raised by training to highest pitch of constructive skill The future prosperity of a country depends greatly on the capacity of discovery and invention among the people, and this has been proved to be not wanting in India. The present economic crisis, which threatens the very existence of the people, cannot but create unrest and set free forces of destruction. The hope of salvation lies in the utilization, through science, of vast natural resources of the country. But they can never be secured by any half-hearted or tentative efforts but by persistently following a consistent and far-sighted policy.

The Voice of Wireless.

By Arthur R. Burrows.

A Greek philosopher once expressed the opinion that the ideal State was one of such extent that a military command might be heard by the soldiers throughout the country, or a herald's proclamation by the entire people.

On St. George's Day the voices of the King and the Prince of Wales were heard from John o' Groat's to Land's End, as clearly by the people assembled in the market places of remote towns as by those who flank the King and Queen beneath the dais in the Stadium at Wembley.

It would appear that by the medium of broadcast telephony the Greek ideal has been realized in the British Isles. But in a democratic country such as this the broadcasting service is not confined to Royal proclamations and military commands. The same service is available to the greatest thinkers and teachers, leaders in science and art, and to those who would show us the paths of peace.

There is a serious side to broadcasting which should be developed as fully as the entertainment side.

Broadcasting can assist the police in the detection of crime and the maintenance of law and order. From time to time during the last few months messages have been radiated from British stations at the request of Scotland Yard and local police authorities, and the results have been gratifying. When one comes to consider that over three-quarters of a million homes in these small islands are to all intents and purposes linked up with a single microphone at Savoy Hill, London, it would indeed be astonishing if greater results were not obtainable by the use of wireless than by any other agency.

Later on, we propose to make a national test to see how quickly listeners will be able to identify a number of persons whose whereabouts may be anywhere between Inverness and Penzance. When we remember the results which attended the man hunt in the London area last year, we are confident that astonishing results will follow.

Farmers are beginning to appreciate the service that broadcasting can render to them. There are, on record, several instances where considerable sums of money have been saved by agriculturists taking instant advantage of the information supplied over the wireless.

Two cases in particular occur to me at the moment of writing. The first happened during a strike of labourers in Norfolk which took place at the critical moment for planting sugar beet. A listener just outside the strike area, hearing the facts by wireless, decided to plant immediately a large acreage of sugar-beet. There are reasons to believe that he reaped a fair reward for his alertness.

The second case was that of a farmer who had a large crop of mangel-wurzel seed, ripe and ready for harvesting. Listening one evening, he heard a weather forecast which meant disaster to these fields of seed. He altered his plans and cleared his fields just before the weather broke.

"Indian Railways."

By A. S. Venkataraman, B.A. *

This is the caption of a handy volume published by the Oxford University Press. It forms the VII Volume in the "India of To-day" Series.

Mr. K. V. Iyer, the author, warns the reader at the outset against considering the views as having any official authority but it does not preclude the possibility that, given an official in a high position and a full equipment of Government Reports and Statistics, the views, though they may lack the official imprimatur, do not lack official inspiration. Mr. Iyer is to be congratulated upon his masterly performance in having handled a difficult, voluminous and controversial topic in such an easy and brief manner and in such an impartial spirit as he has managed it. Far from being *caviarre to the general*, it is a book that must be in the hands of almost every man who has anything to do with Railways, written, as it is, in a way so as to be understood even by laymen.

Railway Budget.

Dealing with 'Construction of Main lines' (as a historical sketch) and the Branch line companies in the first 2 chapters, he lights upon a controversy whose embers have not yet quenched. In the absence of a separate Railway Budget, he points out the weak spot in India's Railway Finance. "This method of providing funds for a large commercial department on a year to year basis and liable to such fluctuation was fraught with unhappy results, a standing instance of which as regards capital, will be found in the history of the construction of the Itarsi-Nagpur Railway—a line 238 miles in length which was commenced in 1908, and has not yet been completed." The system condemned in unequivocal terms by the Acworth Committee is well expressed by the author: "If the provision of funds for capital purposes was in such a sorry plight, that for revenue purposes was no better. In times of bad harvests and consequent bad receipts in other departments, railways were called upon to economize merely to restore the budget equilibrium. Wages of Staff cannot be withheld nor outlay on stores required for running trains or what is called consumable stores in railway parlance, be reduced; the inevitable result was that the allotment for renewals and repairs, or what is generally called programme revenue expenditure, came to be heavily curtailed. This process carried on throughout the years of the war, mainly owing to the exigencies of the general revenues, the available funds being required for purposes of greater moment, and in a less degree owing to the difficulties of obtaining the materials, *e.g.*, locomotives, wagons, axles for carriages, rails, etc., from England, resulted in the railways being left in a bad condition of repair at the close of the war and utterly unable to cope with the traffic." Rapidly summarizing the recommendations of the Acworth and Inchcape Committees, he strengthens the case for a separation of the Budget, which has since become a *fait accompli*.

In the next two chapters, the author gives a wealth of information on open lines and his statistical charts are highly suggestive of his masterly analysis of the subject.

"Working Results."

The hiatus in the growth of working expenses is ascribed by the author to (1) increased wages, enhanced cost of materials, (2) increase in the amounts of fuel bills, (3) increased cost of staff, (4) increased cost of special repairs and renewals of rolling stock.

Management.

In the chapter on '*Management*' the author waxes eloquent. He draws a distinction between the working companies at present and the guaranteed companies of earlier days. He traces how the belief in undiluted universal State management gained rapid ground from 1914 to 1918. Discussing the recommendations of the Acworth Committee he says: "In regard to the question whether the State-worked lines should be handed over to management by companies or the company-managed lines should be resumed by the State

* "Indian Railways," by K. V. Iyer, Oxford University Press, London and Madras.

or the maintenance of the present duel system should be accepted as a permanent policy, the Committee was unfortunately not able to come to a unanimous conclusion." The disadvantages of a duel system, *viz.*, nominal management by the Company and real ownership and ultimate responsibility of the Government, are pithily touched upon. "While the company cannot and does not manage the understanding, it cannot break new ground in any direction except with the sanction of Government. The Government does not feel an obligation to undertake any initiative itself and on the other hand, if the company is supine, the Government is powerless to intervene." "A system under which a progressive company is hampered by meticulous Government control over every detail of expenditure and under which on the other hand the utmost wisdom on the part of Government cannot prevent the injury caused by the unwise and unprogressive policy of the company's Board both to the revenues of the State and to the economic development of the country, has nothing to recommend it." In fact, the key-note is struck in the lines.

"The experience in other countries is not of great assistance in dealing with the Indian problem, as company-management in the ordinary meaning of the words does not exist in India and in fact the whole reference to foreign countries is irrelevant." I am inclined to think, however, that this reference arises out of a terminological inexactitude. Sketching also in outline the arguments of the dissentient members, the author in conclusion expresses the belief that "it will be possible to start an indigenous company as an experiment and to watch the results of one of the promising lines being worked by it, for it would appear prudent to have an alternative to State-management."

Central Control

is the caption of another chapter wherein the author describes how the various bodies such as Railway Board, Central Advisory Council and Local Advisory Committees function as constituted at present.

Rates and Fares.

One may wonder why unlike other countries, in India the minima of rates are fixed. The author sets our minds at rest. "The *raison d' etre* of fixing minima was different. The companies being entitled to a guaranteed rate of interest, with the growth of competition they were tempted to attract traffic by quoting unremunerative rates which would result in a loss to Govennment, *i.e.*, in other words be at the expense of the general tax-payer." I fear this argument is a double-wedged weapon since the tax-payer in India, for purposes of Railways, becomes both a capitalist (producer) and a consumer. The two positions are incompatible. A practical suggestion made by the author is the practicability of issuing rate-books for the guidance of station staff and the trading public coupled with the necessity for the materialization of the recommendation for the formation of a Rates Tribunal. The author would have substantially advanced the position, had he but just drawn out a comparison between the rates and fares in India and in other countries.

In the important chapter on *Railway Problems*, the author deals with some of the practical problems arising out of the every-day difficulties undergone by the travelling public and offers useful suggestions. And at the end the author has added valuable appendices, containing statistics "a mine undrainable of ore". The Oxford University Press must be congratulated on its choice of authors for the Volumes in "India of To-day" Series.

In view of the heavy losses of the textile trades since the war through the activities of fraudulent bankrupts and long firm bankruptcies, it is satisfactory to find that the Committee appointed by the Board of Trade to inquire into the need for strengthening the law has got to work. The chairman of the Textile Association for the Prevention of Fraudulent Trading has already given the Committee some remarkable evidence. It should be remembered that the direct loss to manufacturers is only part of the trouble; the dislocation of trade through selling at a low price merchandise for which nothing has been paid is also a grave matter. It has been suggested that the retail houses that frequently purchase such goods should be prosecuted, but the prospect of obtaining a conviction is probably slight.

Salt Production in Bombay.

The effect of the Salt Tax both on the production and the sale of salt is the chief feature of the Report on the administration of the Salt Department of the Bombay Presidency excluding Sind and Aden for the year 1923–24. The duty on salt was doubled by the Government of India with effect from March 1st, 1923, and again finally reduced to the original figure with effect from March 1st, 1924. Both the increase and subsequent reduction were anticipated by the large wholesale dealers with the result that removal of salt from the various depots was stimulated before the former and after the latter took effect and correspondingly depressed for the 12 months during which the higher duty was in force. The result, as pointed out by the Collector, is that the effect upon consumption cannot be deduced from the figures showing the quantity removed from the depots without information as to the stocks lying in the hands of wholesale and retail dealers at the commencement and close of the year. The general result of the rise in duty during the year was an increase in the receipts, gross and net, accompanied by a fall in the quantity of salt removed. The increase in the gross receipts (over 216 lakhs) was more than Rs. 70 lakhs, while the net increase was over Rs. 100 lakhs, the difference between the two figures being chiefly due to a heavy fall in the amount of refunds and a slight fall in expenditure.

The salt with which the Bombay Presidency Salt Department has to deal may be classified as follows :—

(1) Baragara or Rann salt made from brine wells on the edge of the Lesser Rann of Cutch in the salt works at Kharaghoda and Udu, six miles apart, and jointly named the Pritchard Salt Works. These are Government property and worked departmentally.

(2) Sea salt made within the Presidency. The factories at Dharasna and Chharvada on the south of the Gujarat Coast near Bulsar are both Government property and worked departmentally. The other salt works, with three exceptions, are grouped within a radius of 30 miles of Bombay City. Those which are Government property are leased to private individuals for working ; the others are owned as well as worked privately.

(3) Imported salt, mostly from sea salt, works in Goa territory.

The following table giving the issues of salt during the years 1922–23 and 1923–24 indicates the relative importance of the different sources of supply :—

Description of Salt	Total	
	1922-23	1923-24
	Mds.	Mds.
Baragara Salt ..	26,09,046	15,26,164
Sea Salt	95,57,904	81,94,740
Imported Salt ..	3,03,895	2,89,873
Total..	1,24,70,845	1,00,10,777

or 24,60,000 maunds less than in 1922–23.

The Department is suffering and must for some time continue to suffer from the effects of over-production in previous years and the large stocks which remain undisposed of will render it necessary still further to restrict an output which has already been considerably reduced. The number of pans at the Pritchard Salt Works has been reduced by 33 per cent, while the manufacture of sea salt has been suspended at Chharvada and restricted at Dharasna. This restriction of output is due to the over-stocked condition of the market. The diminution in removals of magnesium chloride from Kharaghoda which was noted in the last year's report continued during 1923–24. The amount has fallen to less than half of that for the previous year.

Both at Kharaghoda and the Sea Salt Works the announcement by the Finance Member in the Imperial Assembly of the reduction of the rate of duty on salt was a signal for a heavy and unprecedented rush for the removal of salt within the short period before the monsoon available for the purpose. It was a race against time. During April

1924, 28,13,918 maunds of sea salt were removed, during May 20,30,017 and during June 2,70,763 maunds. Thus in less than 2½ months more than 51,00,000 maunds of sea salt (including the produce of the Dharasna-Chharvada agars) were removed. As a result the manufacturing season—1st July 1923 to 30th June 1924—showed a record total removal of 1,05,62,930 maunds of sea salt against 83,54,774 maunds for the 12 months ending 30th June 1923. The previous highest recorded figure of sales of sea salt during any one manufacturing season was 1,02,56,890 maunds in 1918–19 when there was a great scarcity of salt all over India. Moreover in the past season almost 50 per cent of the total removals took place during the 11 weeks from the beginning of April to the middle of June.

As the Collector points out "This is an achievenment of which the whole staff of the salt talukas from top to bottom may well be proud. Pride of place is taken by Shewa taluka, from which were removed as many as 19,32,484 maunds of salt."

The number of fish-curing yards at which business was transacted during the year under report remained unchanged, *viz.*, 32. The total quantity of fish brought to be cured was 2,80,999 maunds against 2,31,938 maunds in the previous year. The permission to use denatured salt free of duty, granted to agriculturists, was availed of to the extent of 1,304 maunds against 772 maunds in the previous year, principally in Ratnagiri and Kanara. "It is curious," says the report, "that this valuable and cheap manure for mango trees is not more used in Thana and Kolaba, although its use is well established in Goa, the home of the grafted mango."

The Salt Department was separated from the Excise Department and placed under the Collector of Salt Revenue with effect from 1st March 1924, thus reverting to the system which existed previously to the amalgamation of 1917. The deamalgamation of the Salt and Excise Departments is a preliminary step to the complete severance of the former from the Local Government and the assumption by the Government of India of full control over the Salt Department in the Presidency proper.

The pound sterling has recently displayed a strength which is unusual for this season of the year, when offerings of sterling bills, arising from sales of grain and cotton to the United Kingdom, usually have a depressing effect on quotations. So far this season, such offerings of bills have been small in volume, and the market is very much in the dark as to what may be expected during the next few months. A year ago, sterling started on its downward course in New York on July 16th. From that date to the 19th of October, it displayed only what might be regarded as normal seasonal weakness. Subsequently, however, the fear that England might resort to a policy of mild inflation, added to the uncertainty of the political outlook, resulted in a movement of capital away from London and a decline in the pound sterling from $4.52 on October 19th to $4.26¼ in New York on November 19th. The situation in England has now changed. The advocates of a managed currency are losing ground, and the best opinion is coming out on the side of an early return to the gold standard. In order that this may be accomplished within a reasonable time, Mr. Walter Leaf, Chairman of the Board of the Westminster Bank, suggests that the Bank of England rate should be raised to 5%, the rise in the rate to be accompanied by an explicit announcement that it expressed a definite policy on the part of England, and that it was the intention to return to a gold basis. Prompting the rise in the bank rate, would be the intention to adopt a credit policy designed to bring the English price level into line with that of the United States, a necessary preliminary to the resumption of goldpayments. Because of the decline in commodity prices which this policy would involve, many in England are loth to see it put into effect. The ultimate advantages to England should, however, outweigh the temporary disadvantages, for we believe that other countries, in Europe and elsewhere, would follow England's lead in resuming gold payments, with the result that a good part of the handicap imposed on international trade by the exchange fluctuations of the last few years would be removed.

Development of Industries in Bengal.

We take the following paragraphs from the Resolution on the Annual Administration Report of the Department of Industries, Bengal, for the year 1923 :—

The present activities of the Industries Department may be classified under the following main heads :—

(1) Research and experiments ;
(2) propaganda by means of—
  (*a*) holding demonstrations of proved results at suitable centres ;
  (*b*) departmental bulletins ; and
  (*c*) participation in the several exhibitions held in the province ;
(3) encouragement of indigenous industries by technical assistance and advice as well as by securing special concessions, where possible ;
(4) organization of markets for local products ; and
(5) provision for technical and industrial education—
  (*a*) by maintaining Government institutions ;
  (*b*) by subsidizing or granting scholarships tenable at private institutions ; and
  (*c*) by the grant of State technical scholarships.

It is gratifying to note that in spite of financial and other difficulties the report records fairly satisfactory progress in all these directions.

Research and Experiments.

Research and experiments are essential preliminaries to all industrial development. As none but very big industrialists can afford to undertake these on their own account, the first and the most useful assistance that can be rendered by Government to small concerns of which the Bengal industries as at present organized mostly consist, is to carry on research and experimental work on their behalf so as to discover the value of different raw materials and to evolve practical schemes for their utilization. In the absence of a laboratory great inconvenience is being felt by the department in conducting research work. The Director of Industries has accordingly submitted a scheme for the establishment of a research laboratory which is now under the consideration of Government.

His Excellency the Governor is, however, glad to notice that notwithstanding the difficulty mentioned above the department has carried on some very important research work during the year, and that several useful experiments were in progress when the year ended. The Industrial Chemist has discovered certain useful and novel methods for the direct comparison of the damp-proofing qualities of different varieties of glue. Experiments conducted by him in several shellac factories for devising means for refining shellac have also proved successful. At his instance experiments have also been successfully carried out in the Belliaghatta Glass Works so as to show that in the manufacture of good glass sodium carbonate or soda ash imported from Europe can be partly or wholly replaced by the cheaper salt cake obtainable as a bye-product in the acid industry without the use of high temperature which was hitherto believed to have been necessary. A process has also been worked out for turning out marketable leather from dry salted hides, and considerable success has been obtained in demonstrating the manufacture of fancy leather from goat skins and sheep skins. These results are calculated to be of great commercial value to the industries concerned.

Experiments are now in progress for (1) the manufacture of box sides from local cow hides, (2) the manufacture of glace kid from local goat skins, (3) the manufacture of chamois leather from sheep skins, and (4) a suitable method of retting of cocoanut husk for the purpose of coir manufacture. Interesting investigations are also being carried on for the preparation of suitable pigment finishes for Indian hides and skins and on the possibility of finding some industrial use for the water hyacinth, the stem of which is believed to provide a durable material for the manufacture of mats. Government look forward to the successful completion of these and other experiments in progress, specially of the one last mentioned, success in which will indirectly

act as a stimulus towards the destruction of this notorious pest.

PROPAGANDA DEMONSTRATION.

Special opportunities were afforded by the Calcutta Exhibition held during the year under report for displaying the arts and crafts of Bengal. The exhibition was opened under the patronage of His Excellency the Governor on the 1st of December, 1923, and lasted for 51 days. While the exhibition was open to every article of trade, commerce or industry dealt with in India—whether imported or indigenous—special facilities were offered for local industries. Of all the Government departments participating in the exhibition the Department of Industries naturally took the most active part, and the demonstrations carried on at the exhibition by the staff of the Calcutta Research Tannery and the Serampore Weaving Institute were specially impressive and instructive. The department also undertook the organization and display of the exhibits sent by the several District Cottage Industries Committees and the Industrial and Technical Institutions in Bengal. Thus the exhibition, although originally organized to serve as a preliminary to the British Empire Exhibition of 1924, had a great industrial, commercial and educative value of its own. Thanks of Government (Department of Agriculture and Industries) are due to the organizers of the exhibition who in the face of manifold difficulties carried the undertaking to a successful issue.

Two other demonstrations were held by the Calcutta Research Tannery during the year, *viz.*, one at Sandip in the Noakhali district and the other at the Dacca Social Service and Industrial Exhibition. The former has proved so successful that one gentleman who attended the demonstrations regularly has started a small tannery, and a proposal for opening another tannery on a fairly large scale by some other gentlemen of that locality is now on foot.

Eighteen weaving demonstrations were held during the year, many of which have called forth immediate local response. Special efforts were made to introduce fly-shuttle looms among the silk and *tussar* weavers, also jute weaving on fly-shuttle looms and jute spinning on an improved type of automatic *charka*.

The peripatetic weaving schools are reported to have done specially good work in popularizing improved methods of handloom weaving, and about 500 fly-shuttle sleys were introduced through their agency during the year under review. Government will consider sympathetically the recommendation of the Director of Industries for an extension of this branch of work.

The following useful publications were issued by the department during the year under report, *viz.*:—

(1) Improvements in the refining of shellac by Dr. R. L. Dutt, Industrial Chemist, Bengal. Government are glad to note that this bulletin has already proved so useful as to have created a demand for itself even outside the Presidency ;

(2) Bleaching of *Gengwa* wood in the manufacture of matches by the same author and by Mr. Tincouri Basu—a publication which is also largely in demand and is of special interest to those engaged in the match industry ;

(3) Report on the investigation into the possibilities of the match industry in Bengal by Mr. A. P. Ghosh. As stated in the resolution on the preceding year's annual report, this report, containing as it does many practical suggestions in regard to one of the most promising industries in Bengal, is expected to be a very useful guide to those who are interested in the industry ; and

(4) a bulletin on small tannery schemes which has been compiled to meet the frequent demand for information on the subject of organization of small tanneries.

ENCOURAGEMENT OF INDIGENOUS INDUSTRIES.

The department deserves to be congratulated on its activities encouraging indigenous industries by technical assistance and advice.

With a view to demonstrating to the brass and bell-metal workers the usefulness of a mechanical hammer, Government sanction was asked for and accorded to the purchase of such a hammer. The Calcutta Research Tannery, besides tanning leathers for private individuals, undertook the machine work involved in finishing the leathers of many small tanners in the neighbourhood of Calcutta. At the instance of the Bangitola Button Factory in the Malda district experiments with crude buttons were carried on by the Industrial Chemist, and improved methods of bleaching

and polishing pearl buttons were demonstrated to the proprietors of the factory. In addition to the usual loans granted to ex-students of the Serampore Weaving Institute to enable them to set up weaving factories, assistance in the shape of supplying skilled labour, trained experts or expert instruction, was granted to 20 industrialists or firms.

Besides the above report makes mention of valuable assistance of various other descriptions rendered and technical information supplied to a large number of industrialists. No less than 400 enquiries for technical information and advice were dealt with during the year, many of which necessitated experimental investigation and even extensive research.

In many cases the department acted as a useful and willing medium for putting industrialists into touch with suppliers of their raw materials as well as with firms supplying suitable type of machinery for their manufacturing operations.

The department also made an endeavour to secure special concessions for industrialists. This it is mainly at the instance of the Industries Department that the Forest Department have, since the close of the year, granted, at concessional rates, a lease of the forest block known as Senchal II in the Darjeeling Forest Division to Mr. Sailendra Nath Mitra, proprietor of the Bande Matharam Match Factory, for a period of 30 years. Certain concessions in respect of freight for the carriage over the Eastern Bengal Railway of timber required for the factory have also been secured for Mr. Mitra. The authorities of the Assam-Bengal Railway have, through the intercession of the department, acceded to the request of the Canning and Condiment Works, Limited, Calcutta, to book pineapples from the Sylhet district to Calcutta for *bona fide* canning purposes at quarter parcel rate.

Survey of Cottage Industries.

As a preliminary to the consideration of the subject of better organization of and assistance to the cottage industries, a survey was completed of all the cottage industries of the province, and the report of the survey is awaited with interest.

State Aid to Industries.

The Director of Industries has urged the desirability of taking steps to encourage cottage industries and new or nascent basic industries by means of financial aid and by the subsidizing of research. The State Aid to Industries Bill which was drawn up to secure these objects is still under the consideration of Government.

Markets for Local Products.

Government notice with pleasure that the department has not been forgetful of the fact that one of the most effective means of stimulating indigenous industries is to find suitable and ready market for the finished products. As instances of the valuable assistance rendered in this direction may be mentioned the following :—

The Director of Equipment and Ordinance Stores, Simla, was requested to place a trial order with the Calcutta Button and Comb Factory for *khaki* horn buttons as well as with the Jessore Comb Button and Mat Manufacturing Company, Limited, Calcutta, for horn and celluloid dressing combs. The Controller of Contracts, Simla, and the Controller of Stores, East Indian Railway, were requested to call for tenders from Messrs. Dey & Co., Calcutta, who manufacture drums, tanks, tea-tins, bolts, reading lamps, etc. The various Government departments and local bodies were requested to give the Calcutta Box Manufacturing Company an opportunity of tendering for their requirements of packing cases, boxes, planks, and other products of the firm.

Technical and Industrial Education.

At the present stage of developments of Indian Industries, one of the most effective measures that can be adopted by Government for creating an industrial organization in this country is to make suitable provision for industrial and technical education with the ultimate object of making India self-contained in respect of skilled labour. His Excellency the Governor regrets that financial stringency stood in the way of any substantial progress being made during the year under review in the matter of technical and industrial education, and applications for financial assistance received from many industrial schools had to be refused.

A sum of Rs. 10,000 was, however, sanctioned as an annual grant-in-aid to the Jamshedpur

Technical Institute on the condition that five seats should be reserved for candidates from Bengal. Recruitment of the staff required for the Kanchrapara Technical School was nearly completed during the year, while the remaining staff cannot yet be appointed for want of accommodation to be provided by the railway authorities. The Mining Lecturer and one Assistant Lecturer required for imparting mining instructions in coal-fields were appointed during the year, and a second Assistant Lecturer has been taken in since its close. Manuals were drawn up on mine surveying and coal mining, and the construction of mining lecture halls at Raniganj and Sitarampur was completed. The number of pupils attending the English and Bengali mining lectures were 204 and 89, respectively. The construction of buildings for the Calcutta Technical School has also been completed, but the materialization of this very important and desirable scheme is now awaiting provision of funds and the concurrence of the Calcutta Corporation to the payment of the annual contribution expected from that body towards the recurring expenditure. The Serampore Weaving Institute continued to maintain its high standard of useful work during the year under report. The decision taken by Government on the recommendation of the Bengal Retrenchment Committee abolishing the system of granting stipends and free-studentships to the students of the higher classes adversely affected admission, and Government have consequently revised these orders since the close of the year. The suggestion contained in paragraph 161 of the report for altering the date of commencement of session of the Institute will receive the attention of Government.

Two State technical scholarships tenable in England were awarded during the year under review for studying (1) silk weaving, reeling and dyeing, and (2) the manufacture and refining of vegetable and fish oils.

Cotton Piece-Goods.

The Indian cotton mills recovered substantially last year from the set-back of 1922. The output of 1,563,000,000 yards was well above the average attained during the war, when production so rapidly developed. The total shipment into India during 1923 was 1,467,000,000 yards. When account is taken of Indian exports to other Eastern countries, it may be said that internal cotton requirements are now being met in about equal proprotions by the Indian mills and by imports, mainly of Lancashire goods.

The pre-war average of imports of cotton piece-goods was 2,617,000,000 yards, while the average production of the Indian mills was only 1,105,000,000 yards. The total absorption, including Indian exports, in each of the five years preceding the war was about 3,722,000,000 yards. Last year it was only 3,030,000,000 yards. In the previous year it was still lower, amounting to 2,651,000,000 yards. The high price of raw cotton has put a severe strain on the purchasing capacity of the Indian masses, and trade is being restricted to minimum necessities.

In the past 12 months the shipments of grey piece-goods from the United Kingdom were just under 600,000,000 yards, the revival of the previous year to 833,000,000 yards not being maintained. In this branch of trade the United Kingdom is doing considerably less than half the business of pre-war days. The Japanese quota, which rose to 150,000,000 yards in 1920–21, has not since then gone beyond the 96,000,000 yards recorded last year. In white goods Japan is not a very serious competitor, her quota being between 2,000,000 and 3,000,000 yards. In the competition for the coloured market Japan has been making some progress during tha last two years. Her shipment in 1923–24 of 23,000,000 yards was very much larger than her war average. Our own trade, which touched bottom in 1921–22 has revived somewhat, standing at 303,000,000 yards, as compared with a pre-war average of 590,000,000 yards.

The trade returns for May, now available, show that India is importing cotton piece-goods much more freely than at the same period of last year, particularly white goods. The increased credits India has been able to acquire by the steady revival of her export trade in the last two years are stimulating the imports of commodities she really requires, such as cotton piece-goods.

Industries of Mysore in 1923–24.

The Administration Report of the Department of Industries and Commerce, Mysore, for the year 1923—24 is, as usual, an interesting record of work done.

In spite of the unfavourable conditions that prevailed during the year, several small industries with an aggregate capital of three lakhs, were started.

The year also witnessed the growth of private enterprise in several directions. The manufacture of alkali electrolytically has been started in the Bangalore Cotton, Woollen and Silk Mills, salt being obtained for them duty free. Six small carpentry and smithy workshops were started in Banglore, Kolar and Hassan. In Bangalore, a Silk Filature of 24 basins with a capital of Rs. 50,000 was started.

Large Industries.

The erection of machinery in the new Minerva Mills proceeded apace. The Kadur Tea and Produce Company are reported to be making arrangements to start a Tea Factory in the Koppa Taluk. The Mysore Arts and Wood Works produced articles valued at nearly two lakhs. This has enabled the Government Art Workshop to reduce its operations and concentrate its attention mostly on the production of articles of artistic value. The Match Factory to which the Government gave certain concessions regarding the supply of wood, was floated during the year, with a capital of 20 lakhs.

The Yelahanka Tile Works could not start work on account of the Proprietor's death and the Mahalakshmi Porcelain Works could not be brought to the manufacturing stage as the expert left the concern. The Mysore Clay Works are concentrating their attention on the manufacture of wire-cut bricks and have not yet utilized the concessions granted to them.

The Mysore Tannery which had temporarily suspended its work restarted work with Messrs. Best & Co. of Madras as Managing Agents. The process of manufacture has been thoroughly overhauled and the leather now produced is reported to have considerably improved in quality.

Industries under Departmental Operation.

The Government Soap Factory manufactured soaps costing Rs. 1,21,500 and earned a profit of Rs. 19,747 exclusive of interest on capital. The expansion of the Factory sanctioned by Government having been completed only by the end of May it could not be brought into operation before the end of the year.

The working of the Central Industrial Workshop resulted in a loss of Rs. 3,000. The Workshop confined itself to private orders and is reported to have rendered useful aid to local industries. Proposals for the reorganization of the Central Industrial Workshop are under consideration. The Art Workshop showed a profit of Rs. 274 and the Arts and Crafts Depot a net profit of Rs. 512—9—8.

Weaving Factory.

The working of the Government Weaving Factory during the year resulted in a loss of Rs. 7,661. The management of the concern in the past has been anything but satisfactory. The several audit reports have disclosed a very unsatisfactory state of affairs and Government have to observe that the action taken to improve the institution has not been adequate. The question of overhauling the whole concern and placing it on a satisfactory footing is under the consideration of Government.

State Aided Concerns.

The Premier Metal Factory is reported to be passing through hard times and working at a loss owing to the limited market for the articles turned out in the factory which seems to be due partly to high cost of production. The Thirthahalli Tile Factory, one of the concerns that had received financial assistance from Government, was transferred with the consent of the shareholders to Mr. Agumbe Venkataramiah on his executing an agreement for repaying the loan due to Government on certain conditions. As there was no likelihood of the shareholders of the Mysore Economic Union raising the further capital required to work the concern, steps were taken to liquidate it. Arrangements have been made for increasing the production of the Aryan Hosiery Factory but the progress in the repay-

ment of the loan by its proprietor has been very slow in spite of the several concessions shown by Government. The Essenflour Products, Ltd., made good progress in the manufacture of essential oils.

ASSISTANCE TO PRIVATE INDUSTRIES.

In addition to one application pending at the end of the previous year, seven applications for financial help for the purchase of machinery were received during the year under report and all except one were sanctioned by Government. The total amount drawn from the Treasury during the year was Rs. 40,082 as against Rs. 41,996 in the previous year.

Due to industrial depression and unfavourable seasonal conditions, the collections were not satisfactory, Rs. 57,434 having been collected against Rs. 78,908 in the year previous.

The total amount advanced from the time the system of Takavi Loans was introduced up to end of June, 1924, is Rs. 8,90,472 out of which Rs. 4,77,055 has been recovered. Government consider that greater efforts on the part of the Director are called for in the matter of recovering the arrears and hope that better progress will be shown during the current year.

Exclusive of the large mills and factories, 460 concerns in the State are using power, of which 50 per cent is generated by oil, gas and steam engine. Two hundred and fifteen of these concerns have received financial help from Government.

Arrangements were made to introduce ribbon making, tape making and nakki weaving on a factory scale and to train local men in cotton printing. A large number of Panchama girls are reported to have been trained by the Nuns in Bangalore City in lace making and embroidery.

Government consider that there is considerable scope for the development of Home industries in the State and desire that particular attention should be given to this matter during the current year.

DEMONSTRATION AND EXPERIMENTS.

About 300 new fly-shuttle looms and stays were introduced during the year and about 23 bobbin and pin winding and warping, sizing and twisting and other machines manufactured at the Weaving Factory and valued at Rs. 7,000 were sold. Demonstrators were, as usual, deputed to examine the fly-shuttle looms in all the important centres in which they have been introduced. Interesting results are said to have been obtained from experiments carried on in testing new varieties of wood in the manufacture of furniture and ornamental articles. The Department also carried on experiments in the Textile Industry chiefly in connection with the utilization of Filature Silk on the ordinary looms. The sugar installations at Channarayapatna and Hudi are reported to have worked satisfactorily.

A power drill for well-boring was purchased during the year and the Department rendered assistance to six landholders to sink large wells.

France's policy of placing a protective duty, really prohibitive in character, on wines from Portugal is having the effect that was feared by those who protested against it at the time. A message from Portugal states that the Supreme Council of Commerce meeting under the presidency of the Minister of Foreign Affairs has advised the Portuguese Government to apply three times the maximum tariff to French goods and French navigation. Portugal has also suppressed the literary convention which had existed for fifty years with France. Thanks to this convention French books entered Portugal at special tariffs and French literature has been widely distributed in the country. This, says "La Liberté", is the direct result of placing these duties on Portuguese wines.

The standing Finance Committee of the Legislative Assembly have approved of the scheme for the printing of stamps amd stamped paper in India. The preliminary arrangements are, we understand, now being made for drawing up the plans and framing estimates for the press, which will probably be located at Nasik Road in the Bombay Presidency. It will be remembered that an experimental press was set up in Delhi last cold weather under the direction of Colonel C. H. Willis and the decision now announced indicates that the experiments are regarded as satisfactory, although the climatic conditions at Delhi have proved quite unsuitable for the permanent location of the press there, and hence the selection of the more equable temperature of Nasik Road in Bombay.

Prospectus Law.

Arthur M. Samuel, M.P., writing in the *Times*, refers to some important aspects of Company Law. Company Law, he says, is in a far from satisfactory state, and reform is, in his opinion, overdue. He says:—Meanwhile, until Parliament finds time to pass an amending Act, it would be very greatly to the public advantage if the law, such as it is, were more efficiently administered. As matters now stand, failure to comply with the Company Law does not, in practice, entail any serious consequences upon directors. Confiding members of the public who have lost their money through the misfeasance of directors seldom incur the further expense of putting the law in motion in the hope of recovering damages, and the Board of Trade, which should be the authority to insist upon compliance with the requirements of the law, does little to protect the small investor, although section 81 of the Consolidation Act of 1908 is designed with that object. The Board of Trade, in the opinion of some, does not make adequate use of its existing powers.

Offers for Sale.

As most of your readers are aware, section 81 deals with the disclosure of material contracts in a prospectus. The Courts have never decided what exact meaning is to be attached to the words "material contracts", but the promoter who desires to evade the clause has only to offer shares for sale in a form which, technically, is not a prospectus, to escape the safeguards which Parliament intended the private investor to have. With this object in view a third party is usually employed to deal in the shares. To him the vendor is able to make statements with the object of inducing the public to buy the shares. These statements concerning the position of the company may or may not be true, but the buyer has no redress, for the simple reason that he has had no dealings with the vendor, and consequently has received no guarantees from him. If the buyer proceeds against the intermediary the reply is that the statements made were not on the responsibility of the intermediary, but were published as emanating from the vendor. It might be thought that the public would by this time have known the difference between "offers for sale" and prospectuses, but the public is amazingly slow to learn, and the more stupid certain members of the public are the more necessary it becomes that they should be protected by law from the wiles of persons who deliberately evade the spirit of the Act.

Attitude of Board of Trade.

Last July I asked the President of the Board of Trade on the floor of the House to appoint a Departmental Committee to examine the Companies Acts for the purpose of ascertaining in what particulars they could be amended so as to render it less easy for the principles of limited liability to be used in future in such a way as to permit of results such as those disclosed in regard to the affairs of a company then under discussion. In reply Mr. Webb promised me to give the matter consideration. In a supplementary question I reminded the President of the Board of Trade that he had recently appointed a committee to inquire into scandals arising under the Bankruptcy Act, and urged him to take steps to make a similar inquiry into the Companies Acts for the protection of the public. It is so far satisfactory that Mr. Webb invited me to repeat the question on the reassembly of the House, when he said he hoped to be able to give an answer.

Meanwhile the Association of British Chambers of Commerce may possibly discuss the matter at their forthcoming quarterly meeting. The Norwich Chamber of Commerce has drawn up and will submit a resolution inviting the committee of the London Stock Exchange to introduce appropriate safeguards for the greater protection of the investing public, or in the event of this not proving feasible, to co-operate with the association in making suggestions for the revision of the Companies Acts.

Proposed Remedies.

The measures I myself favour are that every prospectus, every advertisement, circular letter, notice, or other invitation offering for sale any securities in any company shall, upon issue or publication, bear upon it the

certificate of the Registrar of Joint Stock Companies that it conforms with all the provisions of the Companies Act of 1908. At present the public is informed that a prospectus has been filed with the Registrar. But such registration or filing does not give any assurance that the law has been complied with.

The publication of first-rate names of banks, firms, solicitors, is also liable to give the investor a false sense of security, although as a matter of fact the individuals concerned are not in the least responsible for the documents on which their names appear, nor do they vouch in any way for the statements made. In my opinion, any bank, company, firm or person whose name appears as authorized to receive subscriptions or purchase money in respect of any prospectus, advertisement, circular letter or notice to the public of offers for sale of or subscription for any securities for any company, whether registered or not, exceeding in aggregate the sum of £10,000, ought to be compelled to file with the Registrar a statement signed by the solicitors, brokers, directors, and promoters to the effect that all the relevant requirements of section 81 of the Companies Act, 1908, have been complied with so far as the document in question is concerned. I would further make it the duty of the Registrar prior to his issuing his certificate to satisfy himself that the law has been complied with.

LIMITATION OF EXPENDITURE.

There should be a stringent restriction limiting, by graded proportion, the total amount that may be expended for brokerage, underwriting, commission, advertisement, and other expenses of issue by subscription or of sale. If such authorized expenditure is exceeded, the subscribers to or purchasers of any security in the company concerned ought to have the right to cancel their contract and claim return of any money that they may have paid, provided that such request for cancellation is made within one calendar month. In order to bring the matter in general before the public, I have introduced in the House of Commons a Bill of two clauses. It is backed by members of all parties, for this is not in the least a political issue, but a measure for the protection of the public, and in this all of us are concerned.

In the Government of India Communique which announces the appointment of the Taxation Committee we read as follows :— "It will be within the terms of reference to the Committee to institute such an enquiry into the economic conditions of the people as the Committee may consider necessary for its purpose and to report on the adequacy of the material already available, making suggestions to the best manner in which it may be supplemented and the most suitable agency for a wider economic enquiry." We wish to draw the attention of the different Provincial Governments, the several Universities as well as the public to the laudable efforts made in the above direction by the Board of Economic Inquiry, Punjab. From a Report of its Proceedings, just to hand, we find that the Board, is divided into two sections, Urban and Rural, each under the charge of a separate Committee. The Urban section has either instituted or completed inquiries into (1) Profits of Retail Trades, (2) Economic condition of Women in Ginning Factories, (3) Earnings of *Tongawalas*, (4) Mandis, and (5) Factory conditions in the Punjab. Besides inquiries into the conditions of particular localities, and drawing up of a general questionnaire for economic inquiry, we find to the credit of the Rural Section such interesting items as a Thesis on the Milk Supply of Lahore, the Economic Value of Goats in the Punjab, Size and Distribution of Holdings in the Punjab. Prof. Myles, Prof. Brij Narain, Principal Manmohan, Mr. Calvert and a few other Punjab Civilians are the members of the Board. It will be most useful if other Provincial Universities in India can train up a few investigators of this type to work under the direct supervision of strong Boards at each Provincial Centre.

A whistling tree, a native of the Barbadoes, has been imported to Paris, where it is hoped it will become acclimatized with proper care and precaution. The leaves are said to have small holes through which the wind passes, causing a whistle. A sweet pleasant effect is caused by a gentle breeze passing through.

The British Labour Minister intends shortly to introduce a Bill standardizing the eight-hour day.

The U. S. Immigration Law Explained.

Many misconceptions still appear to exist concerning the new law in force in the United States controlling immigration, the provisions of which appear to be very imperfectly understood in many European countries. It is stated, for example, that large numbers of immigrants have arrived in the Argentine in the belief that they will readily obtain there the necessary papers to enable them to enter the United States, inasmuch as the new regulations do not apply to *bona fide* Argentine citizens. The U. S. consulate at Buenos Aires was "besieged" some time ago to such an extent that it had to close its doors for some days, and it is stated that the steamer lines running north have a waiting list containing no less than 15,000 names. The law, however, expressly states that "nationality shall be dertermined by the country of birth, treating as separate countries the colonies, dependencies or self-governing dominions for which separate enumeration was made in the United States Census of 1890." It would thus appear that the prospects of those who are relying upon a hastily acquired Argentine naturalization in order to enter the United States are not favourable.

"Non-Quota" Immigrants.

The passage of the law relating to the various categories to which the immigration regulations do not apply, *i.e.*, non-quota immigrants, is quite clear, and those who come within any of the under-mentioned classes should have no difficulty in entering the United States :—

1. Unmarried childern under 18 years of age, or wives of citizens of the United States, such citizens being resident in the United States when the application for the immigration visa is made. The citizen in question must file a petition with the Commissioner-General of Immigration, claiming the prospective immigrant as his wife or child and furnishing various other particulars. The Commissioner-General then authorizes the appropriate consular officer to issue to the prospective immigrant a non-quota visa.

2. Immigrants who have previously been lawfully admitted to the United States and are desirous of returning after a temporary visit abroad. In this case, the recommended procedure is for the immigrant to obtain a permit to re-enter before leaving the country.

3. *Bona-fide* ministers of religion and professors of a college, academy or university, together with their wives and unmarried children under 18 years of age, if accompanying or following to join them ; also *bona-fide* students, at least 15 years of age, who seek to enter the United States solely for the purpose of studying at an accredited institution.

4. Those who *were born* in the Dominion of Canada, Newfoundland, the Republics of Mexico, Cuba and Haiti, the Dominican Republic, the Panama Canal Zone, or an independent country of Central or South America, together with their wives or unmarried children under 18 years of age, if accompanying or following to join them.

All other persons of a foreign nationality who seek to enter the United States come within the range of the quotas under the new law. This does not, of course, include those classed as "non-immigrants", *i.e.*, Government officials with the irfamilies ,attendants, servants and employees ; those visiting the country temporarily for business or pleasure, or passing in transit through it ; and seamen arriving at U. S. ports and seeking to enter the country temporarily solely in the pursuit of their calling as seamen. The following are also not included :—"Aliens entitled to enter the United States solely to carry on trade under and in pursuance of the provisions of a present existing treaty of commerce and navigation."

Preference Within Quotas.

As is well known, the term "quota" implies the number of immigrants of any nationality who are allowed to enter the country within a year, the year being at present calculated from July 1st to June 30th. The numbers of the respective quotas are given below, but it should be noted that, in the issuance of immigration visas to quota immigrants, preference is given to the following :—

1. The unmarried children under 21 years of age, the father, the mother, the husband or the wife of a citizen of the United States.

2. Immigrants skilled in agriculture and

their wives or dependent children under the age of 16, if accompanying or following to join them. The preference provided in this condition does not apply to immigrants of any nationality of which the annual quota is less than 300 (see below), nor can the preference be exercised in a proportion exceeding 50% of the quota for any nationality. In the case of relatives, the citizen of the United States concerned must apply to the Commissioner-General of Immigration. It may be noted that the terms "child", "father", or "mother" do not include children or parents by adoption unless such adoption took place before January 1st, 1924. The terms "wife" or "husband" do not include wives or husbands by reason of a proxy or picture marriage. The regulations, moreover, apply to all who come under the heading of immigrants, no matter by what class they travel.

National Quotas.

Up to and including the fiscal year ending on June 30th, 1927, the immigration quotas assigned to the various nationalities are determined according to the United States Census of 1890, and each quota consists of 2% of the number of residents of the respective nationality in the United States in that year. For the year beginning July 1st, 1927, and for the years thereafter, the annual quota of any nationality will be "a number which bears the same ratio to 1,50,000 as the number of inhabitants in continental United States in 1920, having that national origin, bears to the number of inhabitants in continental Unitad States in 1920, but the minimum quota of any natoinality shall be 100". "Continental United States" means the United States as situated in North America, and does not include non-contiguous territories, such as Alaska and the Philippine Islands.

The law provides that not more than 10% of the available quota immigration visas for any nationality shall be issued in any one month. The quotas allowed to each nationality under the present law are as follow :—

Afghanistan	100
Albania	100
Andorra	100
Arabian Peninsula	100
Armenia	124
Australia, including Papua, Tasmania, and all islands appertaining toAustralia	121
Austria	785
Belgium	512
Bhutan	100
Bulgaria	100
Cameroon (proposed British mandate)	100
Cameroon (French mandate) ..	100
China	100
Czechoslovakia	3,073
Danzig, Free city of	228
Denmark	2,789
Egypt	100
Esthonia	124
Ethiopia (Abyssinia)	100
Finland	471
France	3,954
Germany	51,227
Great Britain and Northern Ireland	34,007
Greece	100
Hungary	473
Iceland	100
India	100
Iraq (Mesopotamia)	100
Irish Free State	28,567
Italy, including Rhodes, Dodekanesia, and Castellorizzo	3,845
Japan	100
Latvia	142
Liberia	100
Lithuania	344
Luxemburg	100
Morocco (French and Spanish zones and Tangier)	100
Muscat (Oman)	100
Nauru (proposed British mandate)	100
Nepal	100
Netherlands	1,648
New Zealand (including appertaining islands)	100
Norway	6,453
New Guinea, and other Pacific islands under proposed Australian mandates	100
Plaestine (with Trans-Jordan) (proposed British mandate) ..	100
Persia	100
Poland	5,982
Portugal	503
Rumania	603
Russia, European and Asiatic ..	2,248
Samoa, Western (proposed mandate of New Zealand)	100

Siam	100
South Africa, Union of ..	100
Spain	131
Sweden	9,561
Switzerland	2,081
Syria and Lebanon (French mandate)	100
Tanganyika (British mandate) ..	100
Togoland (proposed British mandate)	100
Togoland (French mandate) ..	100
Turkey	100
Yap and other Pacific islands (Japanese mandate)	100
Yugoslavia	671

Such parts of Europe as are not enumerated above, *e.g.*, Malta, Monaco, Liechtenstein, etc., were originally classed together as "Other Europe", and allotted a combined quota of 100. It has since been decided, however, to deal with them separately, and each is allowed, as a rule, an annual quota of ten.

Irrigation in the Punjab.

Reviewing the administration report of the Chief Engineer, Irrigation Works, the Punjab, for 1922–23, the Punjab Government in a resolution states that the capital outlay to date on productive major irrigation works, which were in operation at the end of the year, was Rs. 2,46,39,491. Of this Rs. 15,90,039 represents contributions from Native States. The net expenditure during the year amounted to Rs. 20,85,181. Of this Rs. 500,000 was spent on the Western Jumna Canal in British territory.

Irrigated land showed an increase of 2,66,894 acres as compared with 1921–22. The increase was due to the better climatic conditions prevailing during the rabi crop season of 1922–23, when a record area was irrigated. The working expenses under productive works showed a decrease of Rs. 4,59,324 as compared with the previous year.

The River Indus has been gradually eating into the land on its right bank, which is commanded and irrigated by the Indus canals. This not only involves loss of irrigation, but it has also involved large expenditure on the provision of new head-reaches for the canals. It is impossible to foretell what the future tendency of the river will be, but it is possible that there may be improvement after the present period.

The expenditure incurred during the year amounted to Rs. 1,65,80,308, making a total outlay to date of Rs. 1,70,15,453. Of this total, the states of Bahawalpur and Bikanir, who are co-partners in some of the irrigation schemes, contributed Rs. 9,55,930 of the amount estimated.

The construction of new irrigation canals forms a very important feature of the year under review. Of these, the first to be undertaken since the completion of the great triple canal scheme, is the Sutlej valley project, which was sanctioned by the Secretary of State for India on December 15, 1921. Much progress has been made on this great scheme. The staff employed was greatly expanded, and much important preliminary work was accomplished.

The estimated average value of the crops raised on all canals during the year works out at Rs. 49,30,79,191, giving an average rate of Rs. 46 per acre assessed, as against Rs. 63 in the previous year. The decrease is due to a fall in the price of wheat and other commodities. The total value, according to this estimate, amounts to a little over twice the total capital outlay on all the canals in operation.

The length of channels in operation at the end of March 1923 was 19,786 miles, that is 4,313 miles of main and branch canals and 15,471 miles of distributaries as against 4,348 and 15,381 miles, respectively, in the previous year.

The reduction in the length of the main canals and branches was due to the re-classification of certain channels.

The sixteenth annual field day was held at the Louisiana Sugar Experiment Station, Audubon Park, on July 12th, 1923, and reports that the yield per acre is extremely variable from year to year, and the other is that the variation is constantly downward. Judging from the annual returns of other sugar-producing countries south of Europe, they may also be suffering from the same trouble, but whilst they generally put it down to pests or adverse atmospheric conditions over which they have no control, it may be, as in Louisiana, according to the scientists who signed the above report, that decreased soil fertility is the prime cause for these troublesome fluctuations in the yield, and if so, the trouble need not exist.

Agriculture in the United Provinces.

The Annual Report on the Administration of the Agricultural Department of the United Provinces for the year ending 30th June does not show any striking schemes of expansion; financial conditions were adverse, the report of the Economy Committee was received, and methods of retrenchment had to be explored. The Economy Committee realized that the expenditure of the Agricultural Department was generally well directed and that the scope of economy was very limited; very few of the department's activities were in consequence curtailed, but expansion on any considerable scale was not possible. The budget of the department was confined to slightly over 18 lakhs, and this was sufficient only for work upon existing lines. Nevertheless, much valuable work was done; it is evident that there was progress, for instance, in the construction of tube-wells, cattle-breeding, and the prosecution of agricultural research. Some of these matters are briefly referred to below, and full details are given in the Director's interesting and very readable report.

The farms are the feature of the department which has been most severely criticised in the past. The cry has constantly been raised that expenditure on them is extravagant; there was some justice in the criticism, and Government last year pledged themselves to make the farms, of whatever type, as remunerative as possible. That pledge was in large measure redeemed in the year under review; every class of farm improved its financial results. Of research and instructional farms that at Raya increased its profit of Rs. 627 in 1922–23 to Rs. 6,349 and of experimental farms that at Shahjahanpur raised its profits from Rs. 2,763 in 1922—23 to Rs. 8,032, while the farm at Gorakhpur converted a loss of Rs. 3,317 into a profit of Rs. 3,119. As to demonstration farms, out of fifteen such institutions eight showed a profit, as compared with six last year. If all classes of farms are taken together, expenditure exceeded income by only Rs. 27—a very marked improvement on the 1922-23 figure of Rs. 40,853. A few farms were not economically managed, and there is room for further improvement; but the figures cited show that the farms as a whole were worked in the year under report much more economically than before. Too much importance can, however, easily be allowed considerations of economy in working; the Director is right in saying that the work of the farms needs to be judged from other points of view as well, such as the work which they are doing to benefit local agriculture and to distribute good seed. Government judge the farms at least as much by the work which they are doing as by the financial results which they show, and note with satisfaction that judged by this standard also the farms did well.

The engineering section of the department, helped by a fall in the price of stores, did particularly well. It increased its output of tube-wells from sixteen—the figure of 1922—23—to forty-eight and now has in hand projects for no less than eighty new wells. The section is experimenting with wells of a new, small, and less costly type, which may possibly prove of considerable value. Thanks to the speeding up of work, complaints against the section have given place to appreciation; the requests which the section receives for its services show clearly the value which the public set upon its work. There can be no doubt that the development of tube-wells is one of the most useful of the activities of the department. It is sometimes suggested that the department is usurping the functions of private enterprise; but the criticism is not valid, because no private organization exists that is capable of carrying out satisfactorily the work which the section is doing; the time for the section to stand aside will come only when such an organization has been created. Any cessation of the activities of the section at present would involve great loss to agriculture.

In the course of the year 56,484 maunds of good seed were distributed from departmental seed stores. Private farms and societies were also active in distributing seed; it is estimated that in the Eastern circle alone they distributed 50,000 maunds. There is

ample scope for both agencies; seed distribution is of the first importance to the progress of agriculture, and Government look to private societies to maintain and redouble their activities. Government themselves have this year adopted a programme for ten new divisional seed stores. The effect of distributions in past years is now apparent in greatly increased areas under crops of approved type. The Director reports that it is now beyond his department to estimate the extent of such areas, and suggests that the task should be entrusted to patwaris: Government will consider this suggestion.

The cattle-breeding section of the department continued and expanded its work on the lines which it has laid down. Though unable to comply with all the requests received, it issued seventy-two bulls on loan to zamindars and district boards, compared with forty last year. At both the farms which the section maintains efforts are being made to improve cattle types by selective breeding; it is too early yet to say what success will be achieved, but the experiments are promising. The section is interested in milk-supply schemes, and at Agra one such scheme has already proved successful. The section is doing valuable work, and its usefulness should increase year by year as experience is gained and improved herds are built up.

The development of agricultural education, though not the most striking, is not the least useful of the activities of the department and is now receiving adequate attention after the comparative neglect of previous years. The existing system is as follows. At the top stands the Agricultural College, Cawnpore; this institution gives instruction of the highest type, already trains the bulk of the Provincial Agricultural Service staff, and will train a greater proportion of it as provincialization and Indianization proceed. Beneath the College is the Agricultural School at Bulandshahr, which gives instruction of an intermediate type the extent of the demand for which has not yet been determined. The base of any system of agricultural education must be the provision of instruction of the lowest or primary type, and to provide this a start is to be made this year at the Bulandshahr School with a scheme for the training of teachers deputed by district boards from district board schools: this scheme may well have very important results, and the progress of the experiment will be watched with interest. The provincial system, it is admitted, is not complete and there is scope for expansion, particularly at the bottom; but progress may be expected to be fairly rapid now that the importance of this branch of the department's activities has been recognized.

The two institutions named, the College at Cawnpore and the School at Bulandshahr, both did well. There were fewer applicants for admission to the College, no doubt because it was not found advisable to continue the guarantee of Government employment to some of the students turned out by the College, but the quality of the students who were admitted was good. At the School the batch of students admitted when the School was first opened, completed their training, and all but one were successful in the final examination.

It is satisfactory to note that the department was well supported by the public. Non-officials rendered useful service in sitting on departmental boards and committees; meetings of farms' advisory committees, which are almost wholly non-official in composition, were well attended and much interest was displayed. Certain district boards assisted by forming or by agreeing to form agricultural sub-committees; these sub-committees are likely to do much good, especially if they adhere to the programme which the Board of Agriculture has suggested for them. There is still however much opportunity for private initiative; rapid agricultural progress can be achieved only if a larger number of men of education and enterprise interest themselves in agricultural questions and either invest money in farming schemes upon modern and scientific lines or assist movements, such as the co-operative, which make for the success of agriculture. To suggest but one method in particular, agriculture would be greatly helped if men of public spirit in different areas would take up the question of consolidating holdings: the Co-operative Department will, in the coming winter, attack this problem in some of the western districts and will find the assistance of influential zamindars invaluable.

Further Protection to the Steel Industry.

A Resolution (No. 260-T. (15), dated the 27th November, 1924) of the Government of India in the Department of Commerce states:—The Government of India have received the report of the Tariff Board called for in Resolution No. 260-T. (15), dated 8th October, 1924, of the Commerce Department, on the application by Messrs. Tata Sons Limited, Agents of the Tata Iron and Steel Company, requesting that the Governor-General-in-Council should exercise his powers under section 2 (1) of the Steel Industry (Protection) Act, 1924 (XIV of 1924).

2. The Board has examined the prices at which steel is being imported and those which the Tata Iron and Steel Company has been able to obtain for its products. As a result mainly of a heavy fall in the sterling prices of Continental steel and of the maintenance of the exchange in the neighbourhood of 1*s.* 6*d.*, the Board finds definitely that the Steel Industry (Protection) Act has so far failed to achieve its purpose. For this reason, the Board recommends heavy increases in the duties on unfabricated steel with consequential increases on fabricated articles. The different recommendations are conveniently summarized in the following table. (See opposite column.)

Class of material	Present duty	Proposed duty
Unfabricated iron and steel.	Rs. per ton.	Rs. per ton
Steel bars	40	75
Iron bars	35	65
Steel structural sections	30	65
Iron structural sections	20	50
Plates	30	55
Black sheets ..	30	52
Galvanized sheets ..	45	78
Tinplates	60	104
Rails and fishplates, medium and heavy ..	14	30
Rails and fishplates, light	40	75
Fabricated iron and steel and miscellaneous.		
Fabricated structures ..	25 per cent *ad valorem.*	25 per cent *ad valorem plus* Rs. 60 per ton.
Coal tubs, etc., and built-up pipes	25 per cent *ad valorem.*	25 per cent *ad valorem plus* Rs. 47 per ton.
Fabricated steel beams, channels, angles, etc.	25 per cent *ad valorem.*	25 per cent *ad valorem plus* Rs. 54 per ton.
Fabricated iron, angles, etc.	15 per cent *ad valorem.*	15 per cent *ad valorem plus* Rs. 44 per ton.
Fabricated plates ..	25 per cent *ad valorem.*	25 per cent *ad valorem plus* Rs. 41 per ton.
Fabricated sheets ..	15 per cent *ad valorem.*	15 per cent *ad valorem plus* Rs. 40 per ton.
Spikes and tie-bars ..	Rs. 40.	Rs. 75 per ton.
Switches and crossings.	25 per cent *ad valorem.*	25 per cent *ad valorem plus* Rs. 35 per ton.
Wire nails	Rs. 60	Rs. 90 per ton.

3. The Government of India accept the finding of the Tariff Board that the protection given by the Steel Industry (Protection) Act has been insufficient, and that further protection is necessary in order to give effect to the intentions of the Legislature as expressed in sections 2 (1) of the Act. But they do not think that this further protection should take the form of the very heavy additional duties proposed by the Tariff Board. The Government of India have calculated, in accordance with the methods adopted by the Board in its original report, that these additional duties would impose a burden on the consumer of more than two crores of rupees while the maximum benefit which, if prices rose by the full amount of the increase of duty, they would confer on the industry would not exceed Rs. 50 lakhs in a year. But the Tariff Board reports the existence of heavy stocks of imported steel in India, and until these stocks are exhausted, the industry could not derive the full advantage of the new Tariff. A further objection to the proposed duties is that, if the duties on unfabricated steel are increased, it is necessary to go further and also to increase the duties on fabricated steel.

4. In these circumstances, the Government of India have decided that the further assistance which the Board reports to be

necessary would more appropriately take the form of bounties. The protective duties imposed in June last have brought in more revenue than was anticipated. Up to the 31st October last, the total receipts from these duties amounted to 106 lakhs, and it is calculated that at least fifty lakhs represent extra revenue arising from the enhancements in the duties. Thus, even if allowance is made for the commitments of the Government of India in respect of the bounties contemplated by sections 3 and 4 of the Act, it is probable that there will be a considerable net surplus of revenue from these protective duties as compared with the estimate framed when the duties were imposed. The Government of India therefore propose to recommend to the Legislative Assembly as soon as it meets in January next that the protection now afforded to the industry should be supplemented by bounties. The exact form which these bounties will take and other questions connected with the best method of working the system will require detailed consideration, but the choice seems to lie between bounties on the different classes of raw steel specified in paragraph 2 above at rates equivalent to the additional duties proposed and bounties on finished steel produced in India so calculated as to give approximately the same financial return to the industry. As at present advised, the Government of India are in favour of the latter alternative, and their recommendation will probably take the form that the bounty should amount to Rs. 20 per ton on finished steel produced in India. They are further of opinion that these bounties should be given for one year from 1st October last to 30th September next, that they should be subject to a limit of Rs. 50 lakhs, and that before the period indicated expires, the whole matter should be reviewed in the light of the circumstances then prevailing in order that it may be decided before the opening of the autumn session whether it is necessary or advisable to place fresh proposals before the Assembly.

5. The Tariff Board was precluded by its terms of reference from considering any form of protection other than that contemplated by section 2 of the Steel Industry (Protection) Act. But the Government of India have ascertained that the Board warmly approves of the additional protection, which it has found to be necessary, taking the form of bounties.

A scientific inquiry into the system of Indian taxation is long overdue. In appointing the Committee the Government of India explains that the motive is not any need for additional expenditure or any intention to increase the total amount raised by taxation in India, but to gauge the effect produced by the war on the general level of prices and of expenditure and consequently on the incidence of taxation in its existing form. The recent constitutional changes, the increasing pressure for a more drastic regulation of liquor traffic, the action taken on the recommendations of the Indian Fiscal Commission and the Tariff Board furnish reasons for the study of the subject of taxation in general and for the examination of alternative sources from which to raise money to meet the expenditure which is necessarily to be incurred by the various taxing authorities at the present time. The terms of reference are sufficiently wide :— (1) To examine the manner in which the burden of taxation is distributed at present between the different classes of the population ; (2) To consider whether the whole scheme of taxation, Central, Provincial and Local, is equitable and in accordance with economic principles and if not, in what respects it is defective ; (3) To report on the suitability of alternative sources of taxation ; (4) To advise as to the machinery required for the imposition, assessment and collection of taxes, old and new ; (5) To prepare rough estimates of the financial effects of the proposals ; (6) To include in the inquiry the consideration of the land revenue, only so far as is necessary for a comprehensive survey of the existing conditions. We hope the Committee will come to helpful conclusions.

Dr. Sen, Health Officer, Nagpur, has issued the following for publication :—

"Cheap Vegetable Ghee from Holland is being sold at a high price in almost all the ghee shops in the City. This ghee is less nutritive and more difficult of digestion than milk ghee. The public are requested to be particular about purchase of ghee and to insist on the shop-keeper to supply pure milk ghee."

Cause of Spike Disease of Sandal.

Mr. M. G. Venkata Rao, Sub-A.C.F., Mysore State, has recently written an interesting article in the "Indian Forester" (September, 1924), under the title of "Strychnine in Sandal". In this, whilst dealing with an impregnation of sandal by nux-vomica trees, he makes some significant suggestions bearing on spike disease in sandal. During the course of his inspection of the enumeration of sandal trees in the northern part of Mysore, he came across a few sandal trees growing near trees of *Strychnos Nux-vomica*. As this was a host plant he had not met with before, he examined the root connections, half-expecting that it might turn out to be a bad host, as it is closely allied to *Strychnos potatorum*, the roots of which he had before found to be nearly immune to the attacks of the sandal haustoria. But the roots of *S. Nux-vomica* were extensively attacked, and the woody cylinder penetrated in most cases, the haustorial cushions being medium to large in size. In addition, all parts of these sandal trees, including the leaves, bark and wood, were intensely bitter to the taste, similar to that of the host plant. This strychnine imbibed from the host plant appeared to have no ill-effect on the sandal trees, as they were all vigorous and healthy. Specimens from these sandal trees have been sent to Dr. Coleman for investigating the percentage of strychnine present in different parts of the tree.

This case serves to question the existing theory that sandal takes only the crude sap from the host plants. In the case of sandal, and *S. Nux-vomica*, it is certain that the sandal has absorbed some organic substances from the host in addition to the crude sap. This may be explained in two ways :—

(1) That the sandal haustorium may also function in the absorption of the elaborated sap from the host plants ; or

(2) The haustorium may absorb the disintegrated products of bark and wood during the act of penetration.

The first theory may be supported by the fact that in all cases a certain percentage of the haustoria extends only as far as the cambium, and never reaches the woody cylinder of the roots of host plants. It is quite possible that these haustoria may function only as absorbers of the elaborated food materials, or they may be abortive cases where the normal development of the haustoria has been interfered with. The second theory is more rational and may be assumed to be correct. In *S. Nux-vomica* strychnine is found deposited in both the bark and the wood, and the sandal haustorium must have absorbed it during the process of penetration.

This theory has an important bearing on the investigation of the spike disease in sandal. The sandal haustoria, after it has ceased to function, leaves large open sores on the roots of host plants. Considering that the sandal tree has a superficial root system, and that the bulk of its haustorial attacks on the roots of host plants are found within a few inches of the soil-surface, it is obvious that any kind of infection from the soil will find suitable lodging in the numerous gaping wounds left by the haustoria—and Mr. Rao has several times come across bacterial and fungoid growths in such wounds. The infecting virus may spread into the root or remain localised in the wound itself, but in either case, the sandal haustorium may absorb the poison, as new haustoria attacks often overlap old wounds and the products of disintegration of wood and other organic matter met with are absorbed by the haustoria. The sores left on the roots of host plants by sandal haustoria take a much longer time to heal than ordinary bruises or cuts, and hence are exposed to infection for a longer time. In the light of the above remarks and the existing literature on the subject of the spike disease in sandal, it may be presumed that the main channel of infection of the disease lies through the roots of host plants.

The above inferences have been drawn on the basis that spike disease in sandal is infectious. It is the only rational theory that has stood the test of experience. It is a pity that the theory of the unbalanced circulation of sap has led some of the investigators astray, and the sooner it is given up the better it will be for unravelling the mystery of the disease. It is not, perhaps, generally known that the

major portion of Mysore State is still free from the disease. If a straight line is drawn due east from the northern limit of Coorg, it cuts off all the spiked areas in and out of Mysore to the south of it. All country to the north of this line is still absolutely free from spike disease. About two-thirds of the Mysore State, which includes the bulk of the sandal bearing trees in the State, lies above this line, and no spike disease is found anywhere in this area, though it presents a considerable variety of climate and the rainfall varies from about 300 inches on the Western Ghats to 24 inches in the eastern districts. If the spike disease is due to unbalanced circulation of sap, disease would have been found spasmodically all over the State in places where the contributory causes are much in evidence. During the five years Mr. Rao has been engaged in supervising the enumeration of sandal trees in the northern half of the State and the compilation of sandalwood working plans, and every day coming across sandal trees subjected to all conceivable kinds of injury and maltreatment, he has not met a single tree showing any signs of spike disease. About 2,000 square miles of country have been traversed so far, and over 12 lakhs of sandal trees enumerated, out of which about 60,000 trees are in a dying state, most of them due to severe fires, destruction of host plants and to the maltreatment of the tree itself, which, though considered the main causes which bring about the unbalanced circulation of sap, have not been able to cause the spike disease in a single instance. Mr. Rao suggests (says *The Perfumery and Essential Oil Record*) to believers in this "unbalanced" theory of the spike disease that they should undertake an extensive tour in the northern half of the State, and find out why the factors which are said to bring about the unbalanced circulation of sap fail to cause the spike disease in sandal in the huge stretch of sandal areas extending over 18,000 square miles.

Manufacturing Chemistry.

A long list of new German pharmaceutical products brought out since 1922 has been prepared and circulated recently by the Chemical Division, Department of Commerce, Washington. Among them remedies for nervousness, tuberculosis, and venereal diseases predominate. The types of medicines which have been developed reveal the diseases which the medical profession is combating in Germany. The list makes a very interesting study.

It must not, of course, be inferred that British firms are not active in medicinal invention. Our leading manufacturers have very active research workers, who keep abreast of scientific advance and create substances and combinations of value in ailments more peculiar to our own population. In addition they introduce allied products of larger economic use. The British Dyestuffs Corporation alone during five years has spent £450,000 on research (some of it on the medicinal side), and is still expending well over £50,000 per annum. At a time when speculation, manipulation, or short crop (few can say which) has lifted an article like menthol to 57*s.* 6*d.* per lb. it is satisfactory to see a British factory producing and selling an artificial menthol, the product of its own research, by the ton. From another raw material (piperitone from oil of *Eucalyptus dives*) Australian workers have also brought the production of synthetic menthol to a commercial stage. It would be gratifying if the synthesis of santonin could be achieved in a British laboratory, and it is not impossible. Among vermifuges, however, it may be mentioned that a British chemical works is making a very pure carbon tetrachloride distinguished from the so-called pure article of commerce. Another firm is making a pure form of ichthyol from British oil shale.

Synthetic Cocaine.

In Germany cocaine has been synthesized, and the product (psicaine) is being manufactured there. It is a salt of a synthetic isomer of the alkaloid. It is reported by German workers as nearly twice as pharmacologically active as the natural alkaloid ; its toxicity is about half when injected subcutaneously and about the same as cocaine intravenously ; it is more powerful than the natural drug as an anæsthetic, and in injections and in the form

of snuff it is said to give no physical pleasure. It is claimed that it can effectively replace cocaine therapeutically, and that if it can similarly replace the alkaloid pharmaceutically there is no reason why the use of cocaine should not be absolutely prohibited. In Great Britain, of course, psicaine, as a form of cocaine, would come under the restrictions of the Dangerous Drugs Act.

A most interesting drug discovered during a recent expedition to South America by Dr. H. H. Rusby, Dean of the New York College of Pharmacy and an eminent pharmacologist, is caapi, to which is attributed the power of dispelling fear.

The parathyroid gland is gaining increased importance as a therapeutic agent. Calcium salts have an inhibitory influence on nervous structure, and the parathyroid regulates the calcium metabolism of the body. In diseases where there is a decrease in the calcium content the administration of parathyroid gland substance raises the quantity of calcium in the blood and thereby considerably improves the patient. In paralysis, epilepsy, varicose ulceration, sprue, and whooping cough favourable results have been obtained with this agent, the preparation of which in pure and effective form has been brought to great perfection in this country.

Appliances and Apparatus.

A new form of suture has been designed to overcome a certain element of danger when catgut alone is used—the slippery surface tending to loosening of tension or actual unknotting, while there is also the risk of premature absorption. If unabsorbable material, like silk, is employed by itself there are again minor complications, including adhesions, sinuses, etc. By combining, however, catgut and silk (the former predominating, two or more strands of very fine silk being incorporated on the surface) it is claimed that it is easy to handle, the slipping of the knot is eliminated, and the bulk of the suture is absorbed, while danger from variations in the rate of absorption of the catgut is prevented.

An interesting invention in cachet making produces a cachet nearly flat and claimed to be much easier to swallow. The unfilled cachets are in shape like finger-stalls. They are placed for filling in the vertical grooves of an apparatus consisting of two mounted boards, one fixed, the other adjustable by a lever. On adjusting the movable board the cachets in the grooves open and can be filled. Then, on returning the lever to its previous position, the cachet becomes nearly flat and can be closed by a special pair of slightly warmed scissors, which simultaneously removes an excess in the length of the cachet and closes it. A feature from the manipulative aspect is the absence of moistening.

A new apparatus for measuring the oxygen consumption of a patient at the bedside is a convenience to the medical practitioner. It is portable and it involves no analysis, no breathing-bag, no meter or electric current. The basal metabolic rate is determined by measuring the amount of oxygen consumed during a known period, this amount being automatically registered on a scale. Comparison with a chart showing average normal consumptions, followed by a simple calculation, gives the plus or minus metabolic rate. The apparatus yields a graphic record of respiration and oxygen consumption; in short, it registers "vital capacity".

Besides improvement in the handloom itself, there is also need for experiment in the preparatory processes of weaving. The ordinary handloom weaver wastes an enormous part of his time in preparing warps on the most primitive methods, and of a most uneconomical shortness. Research is urgently needed on the most practicable and the cheapest methods of preparing the yarn for the loom. The Department of Industries has for some time been experimenting on a warping and sizing machine which is proving its success, but is unsuitable to the individual village weaver, the difficulty in the way of its introduction being the need of a trained man to look after it, and the consequent cost of running, together with the fact that it produces more sized warp than is required for a single weaver. Considered from this point also, a weaving institute which will experiment on the most practicable and cheap methods in the preparatory processes is a prime necessity.

My idea of a perfect holiday would be, not a loaf by the sea or among the Swiss Alps, but a week with a crowbar in the China and Glass Department of one of these big West End Stores.—*Mr. Stacy Aumonier.*

Economics in the West.

German External Loan.

London, November 1st, 1924.—One of the most important international financial operations of recent decades has been concluded during the past few weeks with the issue of the German external loan. It will be remembered that the first committee of experts, which was appointed by the Reparation Commission to investigate the German budgetary position and to suggest means for restoring financial equilibrium with a view to facilitating reparation payments, published its report in April last. In July delegates of the Allies met in London and, in subsequent negotiations with the German representatives, agreed upon the adoption in its entirety of the committee's report, with such amendment of detail as might be found necessary on examination of the separate sections of the proposals by the various organizations committees.

One of the vital recommendations of the Dawes Committee was that Germany should receive an international loan of 800 million gold marks for the purpose of stabilizing the currency and financing deliveries in kind during the early part of the operation of the plan. Negotiations were begun immediately after the London conference with a view to the issue of the loan, which was eventually placed during October in the United States, England, France, Italy, Switzerland, Belgium, Holland and Sweden, leaving a small amount to be disposed of in Germany itself.

The security behind the loan, as might be supposed from its immediate oversubscription, is as perfect as financial ingenuity can make it, the ultimate fulfilment of the terms of issue being dependent solely upon the good faith and unmolested energy of the German people. In the first place, the Reparation Commission has agreed to grant priority for the service of the loan over all reparation payments and charges upon the receipts of the Agent-General for Reparation Payments, including deliveries in kind and payments through the operation of Reparation Recovery Acts. Furthermore, the loan service is a specific charge on all payments provided for under the Dawes scheme, amounting to 1,000 million gold marks in the first year, and increasing to 2,500 millions in the fifth and subsequent years. These payments in turn hold precedence over the pre-existing German debt. Secondly, the loan is a direct and unconditional obligation of the German Government, based upon all its assets and revenues. Thirdly, collateral security is given on the controlled revenues, namely those derived from customs, from tobacco, beer and sugar taxes, and from the spirits monopoly, these being estimated to produce over 1,000 million gold marks per annum. The German Government waives the right to create any prior or equal charge upon these controlled revenues. And lastly, the purchase of the foreign currencies necessary for the service of the loan have an absolute priority of remittance over the funds which would otherwise be transferred in discharge of reparation or other liabilities.

The amounts of the loan taken up and terms of sale in the various contributing countries are set out in the following table:—

German Seven per cent External Loan 1924–1949:—

	Nominal Amount	Price of Issue %	Redemption Price %	Yield %
UNITED STATES	$110,000.000	92	105	7.90
EUROPE:*				
Great Britain	£12,000,000			
France	.. 3,000,000			
Switzerland	.. 3,000,000			
Holland	.. 2,500,000	92	100	7.79
Belgium	.. 1,500,000			
Sweden	.. 1,500,000			
Italy ..	.. 1,000,000			
Total Europe	£24,500,000			

*Sterling equivalents.

The table explains itself. More than one-half of the loan was taken up in the United States and about one-quarter in London, the remaining £12½ millions being spread over other European countries. The American portion was issued in terms of dollars and the European in sterling or in local currencies at their sterling equivalents. In every case the price of subscription was 92, with redemption over 25 years in the European countries at 100 and in the United States at 105. The yield, allowing for redemption

thus reaches 7.90 per cent on the American share, and 7.79 per cent on the European. The net sum accruing to Germany, after allowing for bankers' commissions, stamp duties and other charges, will work out at nearly 800 million marks, leaving a small balance to be found by Germany herself. Assuming no change in the rate of exchange as between Berlin on the one hand and New York and London on the other, the annual sum required for interest and sinking fund together is estimated not to exceed 91½ millions. The average yield to the investor, allowing for the premium on redemption, works out at 7.85 per cent, and the cost to the German Government of the actual cash received at about 8½ per cent.

The real yield of the loan is a matter of considerable interest. It is, in the first place, quite probable that during the currency of the loan sterling will reach parity with gold, thus restoring the pre-war rate of 20.429 marks to the £. Such a movement must considerably increase the interest charge on Germany in respect of the sterling half of the loan. It will only increase the real yield to investors however if parity has been reached by a fall in prices in Great Britain. For if prices rise in the United States and remain stable in this country the British investor will still receive his 7.79 per cent, which will be worth the same amount of goods and services year by year.

This makes it clear that the disparity between the real yield of the American and European sections of the loans changes with variations in the relative price levels. For if the British price level remains stable while sterling is restored to parity by a rise in American prices, then the American yield will fall in terms of goods and services. That this possibility has not been ignored is demonstrated by the difference in redemption terms. The premium on redemption of the American portion increases the arithmetic yield to 7.90 per cent, but it is quite possible that the higher real yield which exists at the present time may be curtailed by a rise in American prices. Thus the more favourable American terms at the outset may well be neutralized by relative price movements. At the same time, it must not be forgotten that in view of the size of the American issue and the well-marked but declining antipathy in the United States towards foreign securities in general, more attractive terms would be necessary there than in Europe, particularly in this country.

Effects of the Loan.

The subscriptions to the loan will serve to increase the exchange stock of the Reichsbank. The amounts received are credited in the first instance to the Reich Government, but the Reichsbank immediately takes over the proceeds in consideration of the crediting of 800 million marks to the account of the Agent-General for Reparation Payments. Thus the Reichsbank will find itself in possession of the equivalent of some 400 million marks in the shape of deposits in American banks and of a similar amount in balances in various European depositories. Much will depend upon its policy with regard to these deposits. It may wish to convert its sterling into dollars, for the purpose of obtaining either gold or dollar balances. In this case again the conversion would place a drag on the progress of sterling to parity and might express itself in a movement towards a fresh depreciation.

It appears likely that the American portion of the loan may be retained in the form of dollar balances, so that no heavy withdrawals or earmarking of gold may be expected in the immediate future. Whether this actually takes place however will depend largely upon the currency requirements of Germany as they make themselves felt in a demand for additional issues of Reichsbank notes. In any case it is clear that the loan places in the hands of the Reichsbank a power which is capable of exercising considerable influence on the exchange markets and the American gold situation.

It is important however not to allow the scope of the loan and the power which it places in the hands of the Reichsbank to lead to over-emphasis on its beneficial effects on the economic life of Germany. To imagine that as a result of the loan that country will immediately rise like a phœnix from the ashes to take a predominant place in the world's productive mechanism is to underestimate the scarcity of capital and credit from which Germany is suffering at the moment—a

scarcity which can only be made good during a fairly prolonged period of energetic saving, with a continuance of foreign aid. The loan, in other words, is palliative rather than curative. It is merely the first of many. The experts' report itself contemplates an early issue of new capital for the Reichsbank and of 500 millions in railway preference shares, which may be disposed of abroad, quite apart from further problematical sales of railway bonds and ordinary capital and industrial debentures. Reports are continually coming to hand of external borrowings contemplated or being negotiated by German municipalities and industrial concerns, and of credits being granted to all kinds of public bodies and business enterprises.

This process must continue for some time. Lending must be carried on either through public issues in foreign countries, by sales of securities through Stock Exchange channels, by private loans, or by bank credits. The German economy is like a sick man whose life has been saved by an infusion of blood, but who cannot recover without continuous and careful nursing and judicious nourishment. All this however is dependent in the last analysis upon the preservation of peace and the scrupulous avoidance of political alarms. Granted the maintenance of peaceful conditions in Europe, in particular as between Germany and the Allies, new capital will flow into Germany as required, to assist the recovery which shall enable her once again to fulfil her essential role in world trade and production. Peace and finance are not twins, but they are inseparable partners in the work of reconstruction.

British Trade Policy.

Will the Conservative Majority Mean an Era of Protection?

London, November 8th, 1924.—All calculations have been upset by the result of the British election, which has given the Conservative Party a far greater majority than even its most sanguine supporters can ever have expected. The progress of the campaign has been watched and its result has been awaited with great interest on the Continent, and the policy of the forthcoming Conservative Government will be followed with the closest attention. The new Parliment will meet on the 18th inst., by which time it is expected that Mr. Baldwin will have formed his Government. Parliament will probably accomplish little before the end of the year except the passing of one or two purely domestic measures for constitutional purposes.

With the object of ascertaining what effects the change in Government is likely to have upon trade, we have sought the opinions of a few leading authorities, and their views will be read with interest by those to whom the future of British commercial policy is important. Interest naturally centres upon the possibility of a curtailment of the country's free trade policy, and in this respect our informants have some very cogent remarks to make. Apart from this aspect of the case, it is generally agreed that a period of stability in politics may be expected and that this will be in every way a good thing for the trade of the country.

Sir Ernest Benn's View.

In this connection, Sir Ernest J. P. Benn, who has written much on industrial and economic subjects, says in the *European Commercial*:—"Apart altogether from wider political considerations, there can be no doubt whatever that the first result of the English elections will be a revival in that confidence upon which trade is based. The Stock Exchange, as might be expected, marked up prices as soon as a Conservative majority was assured, and that is something of an index as to what is passing in the mind of the manufacturing and commercial classes as a whole. Without waiting to consider the ultimate effects of such changes of policy as the change of Government involves, people generally are content at the moment to know that for the first time since 1906 Great Britain is in for a lengthy period of stable government, and commercial men everywhere prefer stability irrespective of policy, to policy, however good, which has not the element of permanence in it.

"A great deal, of course, depends upon how far the Conservative Party will use its huge majority to force its protectionist inclinations. It has the power to do anything that it likes in this direction, and previous experience of political parties tends to show that when in power they are not too scrupulous in the observance of election pledges. Conservative candidates as well as leaders have been at great pains all through the election campaign to explain that there was no question of protection, that there would be no taxes on food, and that all that was intended was to apply, through the machinery of the Safeguarding of Industries Act, such minor fillips to special industries as might seem advisable in special circumstances. If the Government remembers its election speeches in considering any alterations in fiscal arrangements that it may eventually make, these can be ruled out as of minor importance by comparison with the advantages resulting from the relief from political upheaval.

"The position with regard to Europe is not so clear. But it would seem as if the British electorate has been guided, as it always has been guided, by a sort of unconscious sense of what is right and practical. It is quite impossible that, even should the Marquis Curzon be reinstated in the Foreign Office, he would be able to reverse the good work of the Labour Government in getting the French out of the Ruhr, in putting the Dawes Report into action, and making the German loan and all that it means a practical possibility. On the other hand it is equally certain that the new Government will bring to an end all those mysterious negotiations with Soviets and Communism which have frightened and alarmed the whole of the English business world. In a word, what has been done in the direction of a European settlement cannot be undone, and what was threatened in regard to Russia will not now be completed.

"The real danger of the British election lies in the extinction for the time being of the historic Liberal Party. Opinions differ widely as to where the responsibility for this catastrophe should be placed. Conservatives and Socialists have joined in attacking the old Liberals and have apparently succeeded in reaching a position where there are again only two parties. If this should prove to be the case, a matter which is still far from settled, the outlook for the future is full of danger. Britain will have approached very nearly the grave risk of a class war. It is, however, far too early to speculate on this problem."

The F. B. I. Opinion.

In answer to our questions on the subject, the Federation of British Industries is of the opinion that the new Government will mark the introduction of an era of stability and tranquillity in industry. It is possible that Part II of the Safeguarding of Industries Act will be restored, though no opinion is expressed as to the Merchandise Marks Act. As regards the much discussed McKenna duties, their re-introduction is not expected by the Federation, which points to the recent increase of production and cutting of prices on the part of many motor manufacturers. Certain measures of Imperial preference may be part of the Government's policy, but the F. B. I. expects that Mr. Baldwin will, in the main, follow the lines laid down by Mr. Bonar Law, Mr. Baldwin being prevented by his election promises from indulging in any large protection schemes. The new Government, it is stated, will come into power just when a revival of trade seems likely, and this revival will best be fostered by the certainty that there will be no sudden changes in financial, economic and commercial policy.

Protection to be Made Easier.

The National Union of Manufacturers is of the opinion that Part II of the Safeguarding of Industries Act will be reimposed and its scope extended so that it will be easier for a trade to get protection. Hitherto, the decision has rested with a tribunal of merchants, who have been generally unwilling to grant any protective measures; in future, it may be possible for the industry concerned to prove its need direct to the Government. It is expected that the Merchandise Marks Act, which was about to become law when the last Conservative Government was defeated, will be passed, in company with legislation to the effect that goods to which any Imperial preference is applied shall be of British manufacture to the extent of 75%.

Canadian Trade and Finance.

Montreal, November 1st, 1924.—After considerable negotiation, a Trade Agreement between Australia and Canada has finally been arranged and will come into effect by proclamation on a date to be agreed upon by both countries. Australia has not extended to Canada the full benefits of her British Preferential Tariff, but has granted this concession on certain specified articles, in addition to which, certain other Canadian products will be allowed to enter Australia under the Intermediate Tariff.

When the Agreement comes into force, all Australian products will enter Canada under the terms of our British Preferential Tariff, which will be altered in respect to raisins and dried currants—important products of Australia—so that these commodities will enter free under our Preferential Tariff and be charged 3 cents per pound under the Intermediate and General Tariffs. These rates compare with existing duties of one-half cent per pound under the British Preferential Tariff and ⅜ of a cent per pound under the Intermediate and General Tariffs.

The most important concession received by Canada is that allowed on newsprint paper. Canadian mills at one time did quite a good volume of business with Australia in this commodity, but have latterly been shut out of the Australian market, on account of the very substantial preference enjoyed by British manufacturers. Australian trade returns, for the fiscal year ending June 30th, 1924, show imports of printing papar valued at £2,440,391, or approximately $10,981,759 at current rates. The market is obviously an interesting one, and the prospects of it being opened to Canada are all the more satisfactory, in that they come at a time when fresh outlets for our production are highly desirable.

Australia is already a large buyer of Canadian automobilies, our exports during the fiscal year ending March 31st, 1924, having been valued at over $9,000,000. As Australian imports of motor bodies and chassis, during the year ending June, 1924, reached a value of approximately £11,000,000, there is obviously ample room for an increase in Canadian exports, if the new tariff rates enable us to take away business from our competitors.

The most important concession granted by Canada is that on dried currants and raisins, Canadian imports of which were valued at $3,776,000, during the twelve months ending March, 1924. The preference granted to Australia is a very substantial one, and should make the business sufficiently attractive to result eventually in their supplying practically all our requirements. The new tariff provisions will tend to make dried currants and raisins more expensive. This is part of the price which Canada has to pay for securing a new market for certain Canadian products. The advantages and disadvantages of Agreements of this sort are exceptionally difficult to estimate, since a great deal depends on the trade developments which they are usually expected to result in. Such Agreements are not easy to retire from, without loss of friendship, even at the date which may have been set for their revision, and very careful consideration of the loss and gain arising from them is therefore rendered doubly important.

Imperial Preference.

A feeling apparently exists in Australia, and in other countries of the Empire as well, that the preferences extended to Canada are often taken advantage of by United States manufacturers, who establish branch plants in this Dominion with the idea of adding to their products just sufficient Canadian labour and material to allow of entry being claimed for them at preferential rates. Canada would be well advised to clear up any misunderstandings which may exist in this connection. The fact of the matter is that the prospect of securing business in the Canadian domestic market has been the primary consideration for the great majority of U. S. manufacturers who have established factories in this country. The advantages secured through our Preferential Tariff arrangements with other countries of the British Empire are only an added attraction. If the Preferential market had been the main consideration, there would undoubtedly have been a tendency to cut down to a minimum the operations performed in Canada on the

articles produced. The comparatively high duty, which might have to be paid on partly finished articles imported from the United States, would not be a deterrent, since a refund of 99% of the duty paid is obtained when such articles are exported. With the Canadian market as the main consideration, however, it becomes important for these U. S. branch factories to use Canadian materials and labour to the greatest extent possible, in order to save duty; and this is what has actually taken place.

There is another feature of this situation, which should not be overlooked, namely, that the advantages Canada has been given in her various trade agreements have been counterbalanced by the granting of preferential entry into the Canadian Market. The investment of foreign capital in new industries tends to enlarge the Canadian Market and makes the concessions we have granted so much the more valuable.

Coffee.

With the exception of cotton, no important agricultural commodity is to-day selling at such a relatively high price as coffee, a marked contrast to the situation which existed in 1921, when the pressure of a large world crop on a market disorganized by the crisis forced prices down below pre-war figures. We print, below, statistics compiled by the New York Coffee & Sugar Exchange, covering production, consumption and prices for 1919—1924, as well as an estimate of the 1924—1925 crop, taken from Wileman's Brazilian Review of July 16th last :—

Bags of Sixty Kilos.

Crop Year	Production	Consumption	Price of Spot Rio 7's on July 1st, 1920/24
1919–20	15,163,000	18,433,689	13¼c. per lb.
1920–21	20,283,000	18,553,493	6½ ,,
1921–22	19,820,000	19,882,702	10⅝ ,,
1922–23	15,961,000	19,240,964	11 ,,
1923–24	21,702,000	21,978,550	15⅜ ,,
1924–25	16,950,000	22,000,000	....

Since July 1st, 1924, the price for Spot Rio 7's on the New York Market has risen to 20 cents per pound.

In April 1921, when coffee prices were excessively low, the Brazilian Government instituted a valorization scheme and entered the market as purchasers, with a view to restoring prices that would be profitable to the planters. Unlike somewhat similar operations, which have been attempted in other countries, this scheme was successful, mainly because of the fact that Brazil produces about 70 per cent of the world's coffee supply, and is therefore in a peculiarly favourable position to control the market. An increase in world consumption since that time, and a small crop in the 1922–23 season, enabled the Government to dispose of its large purchases at a profitable figure, and it now holds no coffee. The provisions in regard to the limitation of entries into Rio de Janeiro and Santos, which were put into force in 1921, are still effective.

Estimates of the amount of coffee held up-country in Brazil, and available for sale during the present season, may have to be increased. Production in 1924–25, however, may fall materially below the estimate printed above, in which case the world carry-over of coffee would have to be heavily drawn on to fill consumers' needs during the 1924–1925 season. The statistical position of coffee is undoubtedly very strong at the present time. Opinion is divided as to whether or not this has been fully reflected by current prices, which are exceptionally high. The prospects for the crop of 1925–26, and the influence which high prices may exert on consumption, will no doubt be the main factors in the situation from now on.

An article by Mr. K. L. Moudgill, B.Sc., in the "Journal of the Society of Chemical Industry" dealing with Travancore cardamoms, gives data—based on distillations of 400 grammes of seed and one lot of 200 grammes of "wild" seeds. Lest the results, obtained with Travancore seeds, should be compared with, or taken for, the normal constants of the oil of "wild" cardamoms, as it is known in commerce, and as prepared from the Ceylon seeds, Mr. C. Edward Sage, F.I.C., presents in this issue figures which show that Moudgill's sample must have been something entirely different from the oil of "wild" cardamoms as known in this country and Germany. Possibly, another addition to the many varieties of cardamoms has been discovered for an ester value of 186 is entirely abnormal for oil from the ordinary long, brown "wild" cardamoms.

Madras Agricultural Notes.

Of late reports of the occurrence of a peculiar disease of the turmeric crop were received from the Salem District. The plants were reported to turn pale and sickly and to wither by degrees until ultimately they dried up. Specimens of the rhizomes sent for examination showed the presence in varying abundance on the surface of an incrustation of thin disc-like insects known as "Scales". An examination of the crop in the field later on confirmed the surmise that these scale insects must have been the cause of the disease.

The scales—which have the look of miniature oyster shells—are in reality soft-bodied insects which protect themselves with a hard shell-like covering. They are possessed of a thin hair-like beak with which they are able to pierce the soft tissues of the rhizomes and to suck the plant sap from them. Although these insects are small, they are in many cases present in such large numbers as to cover the entire surface of the rhizomes and the cumulative effect of the damage done by them is, therefore, very great. In addition to drawing the life-sap of the plant, they are also believed to inject a salivary secretion which is suspected to injure the plant tissues a great deal.

The female scales when mature begin to lay eggs which hatch almost as soon as laid into tiny active insects. These crawl out of the shield of the mother and actively seek unoccupied places on the rhizome, whereon they could fix themselves for life. Thus they may establish themselves on the newly formed roots or on the stems of the fresh shoots. As they multiply in course of time the effect of their attack would appear to manifest itself in a sickly pallor of the shoots—ultimately leading to their death.

At Veerapandi in Salem district—whence the report had been received—enquiries made elicited the fact that the seed of the diseased crop had been obtained from certain villages in Rasipuram taluk where turmeric is largely cultivated. A visit paid to two of these villages showed that this scale insect was in evidence in every field examined and enquiries made brought out the fact that a similar disease was known to occur there in the final stages of the crop.

As to how the disease is brought into being, there is no doubt whatever that it is conveyed with the seed. The scale insects are firmly attached to the rhizome and do not drop off when the roots are gathered at harvest. As no attempt is made to remove them before planting, the pest is carried without hindrance from crop to crop and is perpetuated. What is needed therefore to prevent the infestation of a new crop is either to use clean seed or to treat seed, if infected, so as to kill the scale insects. This can be easily done by dipping the seed in a solution of fish oil soap or of crude oil emulsion for a short time and drying them in shade before planting. The scales will thereby be killed and the crop will be free from the pest.

In case the crop has already been planted, treatment is bound to be more difficult and much less satisfactory. The following measures have been tried and the results are being awaited. Solutions of the aforementioned insecticides were applied in small quantities with a watering can directly to the roots of the plants, which were exposed on one side with the help of a hand-hoe. The soil was thereafter replaced and the field irrigated on the following day. It is, however, evident that it would be far safer and easier to prevent infection at the time of planting than endeavouring to combat the pest later on.

Tree Surgery.

This aspect of the control of plant diseases has not, during the past, received from the garden-owners the attention and recognition that it deserves. This is chiefly due to the unfavourable results in certain cases on account of ignorance of the benefits that result where this work is properly done. Trained and reliable "plant surgeons" from this section have demonstrated to the public as to the benefits of careful surgical work on trees. The following are a few instances where surgical work has been demonstrated with benefit to the tree owners :—

(1) *Stem Bleeding disease of cocoanuts.*—This has been noticed in several districts

of this Presidency. It is called in Tamil "Saru-Ozhugal noi" (oozing of juice), in Telugu "Lakka urugadam" (exudation of lac like fluid) and Malayalam and Kanarese "Rakthakariroga" (blood oozing disease). The first sign that the disease has entered the tree is when you see a reddish brown fluid like blood of man and animals, coming out from the cracks of the stem. In advanced cases when the liquid comes out from more than one point in the tree, the whole stem inside turns yellow and becomes rotten. The easiest and most effective remedy is to cut out the diseased parts, together with a little healthy tissue all round to be sure that all the rotten stuff has been removed. This is easy to find out because the rotten portion is yellow and the healthy portion blood red in colour. All material removed should be gathered and buried deep in a pit if burning is impossible. In cutting out the rotten portion care should be taken to remove every bit of the diseased portion and to apply hot tar over the cut surface immediately. An ordinary 1-inch chisel and a hammer are enough to carry out this operation satisfactorily. To make tar to stick on to the cut surface a lighted torch is passed over. Tar should be heated before applying. It is very important that all the rotten matter in the stem should first be completely removed. This method was adopted in Sholavandan, Madura district, and some other places where cocoanut trees were noticed showing this disease. The trees are now free from this disease and are bearing bunches.

A second instance is the *Bud-rot of Palmyras* in Godavari and Kristna. In the palmyras, the central leaf dies, the growing point at the base of the bud dies and in consequence the bud rots. If the tree is operated upon in time, that is, affected leaves, leaf sheaths are cut and removed and the healthy bud left, the tree puts forth new leaves and grows to its natural size once again. If the bud is dead, the crown should be cut down and split into pieces and burnt to prevent the disease from spreading to other healthy trees.

These operations were initiated in 1906 and the cost for 15 years up to 1921 was about three lakhs of rupees. The benefits of the operations may be counted as follows: The value of the palms saved is 1,901,000 rupees. The disease has been reduced from a great menace (100,000 trees) in 1908 to a controllable factor (8,700 in 1921).

Die-back disease of orange and lime trees is the third instance. In Tamil districts it is called "Sulli tattal" and in Telugu "Pulla virugadam". Both terms signify that green branches dry up. The disease shows itself on the young branches which dry up, leaves dropping off from them. This drying up gradually descends downwards, several branches are affected and they stand bare. As, with a sharp knife, a surgeon cuts out the rotten portion in gangrene in human beings which this disease resembles, the affected portions in this case also have to be operated upon. In the case of human patients the doctor washes the portion with an antiseptic lotion so that all the diseased matter in and round the portion is killed. He then covers the wound with an antiseptic to protect it from external infection. The wound thus protected heals up quickly. After this operation the patient is kept under proper sanitary conditions. Nourishing food is recommended to help patients to recoup the lost strength owing to the drastic treatment. The same procedure is followed by the "plant surgeon" also. He cuts off the dead portion with a sharp knife or chisel and takes care to remove a little healthy portion also so as to be sure that all the diseased matter has been removed. This is what is known as "operating a diseased tree". He washes the branches thus operated with an antiseptic lotion. This lotion is known as Bordeaux mixture and is known to kill any fungus matter that might have been sticking on to and about the operated portion. The "plant doctor" then emphasizes the necessity of proper cultivation and judicious manuring and watering so as to bring about a vigorous growth after the shock due to drastic treatment. This treatment is what is known as "tree surgery".

The Spanish gold premium for the payment of import duties in the current month is 53.06%.

Works are to be erected in Czechoslovakia by Anglo-Dutch interests for the manufacture of typewriters.

Economic Notes.

Maternity Benefits Bill.

Copies of Mr. N. M. Joshi's Bill to make provision for the payment of maternity benefit in certain industries have been received from the Government of India and circulated by the Government of Bombay to the Chambers of Commerce, Millowners' Associations, the Indian Merchants' Chamber, the Social Service League and other representative bodies, as well as certain officials, for their views. The Bill, which seeks to carry out some of the proposals contained in the draft convention passed at the first International Labour Conference held at Washington in 1919, proposes: (1) To prohibit the employment of women, in industries the work in which is regulated by law, for six weeks after confinement. (2) To enable them to leave work six weeks before confinement. (3) To prevent them from being dismissed from service during these periods. (4) To provide for the payment to a woman worker of financial help sufficient to maintain her and the child in a healthy condition, the money to be raised by the Local Government by levying contributions on the industries covered by the Bill, in the form of a small cess on the products of such industries or in some other convenient form. A fund will be established called the Maternity Benefit Fund, out of which payments will be made.

Exports of Lac from Bengal in 1923–24.

The Report on the Maritime Trade of Bengal for the official year 1923—24 states:—The very satisfactory trading done in 1922–23 was improved upon in the past year, but it was effected at a considerable sacrifice in price, the total quantity of lac exported showing an increase by 2 per cent from 475,227 cwts. to 485,048 cwts., while the total value actually declined by 12 per cent from Rs. 1,025 lakhs to Rs. 905 lakhs. The United States maintained their leading position in the trade but reduced purchases of button and shellac from 246.233 cwts. to 245,521 cwts. Japan and the Netherlands also took less, but the United Kingdom, Germany and France more, the marked increase in demands by the two last named countries being responsible for the improvement in the total quantity shipped. Italy, the Argentine Republic and China also made larger purchases. In London prices for T. N. per cwt. in the first week of each quarter of 1923—24 were 355 shillings, 270 shillings, 320 shillings and 305 shillings, the quotation at the end of March, 1924, being 285 shillings. Local prices per bazaar maund for the same period were Rs. 177, Rs. 125, Rs. 160 and Rs. 156, the year closing with prices ranging from Rs. 139 to Rs. 147. Collection of lac cess advanced from Rs. 1.38 lakhs to Rs. 1.72 lakhs.

Indian Customs Revenue.

According to returns received in the Commercial Intelligence Department, the grand total of gross Indian Sea and Land Customs Revenue (excluding Salt Revenue) amounted to Rs. 406 lakhs during the month of August, 1924, as against Rs. 377 lakhs in the preceding month and Rs. 320 lakhs a year ago. The total revenue realized in the five months, April to August, 1924, was Rs. 1,827 lakhs as compared with Rs. 1,541 lakhs in the same period last year. Import duties contributed Rs. 1,463 lakhs; export duties Rs. 190 lakhs; excise duties on cotton manufactures Rs. 87 lakhs, on kerosene Rs. 40 lakhs and on motor spirit Rs. 32 lakhs, and land customs and miscellaneous Rs. 15 lakhs. Increases were noticeable in import duties on sugar, cotton yarn and piece-goods, yarn and textile fabrics other than cotton, liquors, iron and steel and other metals, and motor cars and cycles, in export duties on raw and manufactured jute, and rice and in excise duty on cotton manufactures and on motor spirit. On the other hand, import duties on matches, railway plant, machinery, tobacco, and mineral oils, and export duties on raw hides and skins and tea showed decreases. The protective special duties collected under the Steel Industry Act from the 13th June to 31st August, 1924, amounted to Rs. 56 lakhs which are included with the figures of import duty.

The port of Helsingfors was reopened for navigation on the 14th of April.

Air Routes to India.

Many of the newspapers received by the last mail from England give prominence to the statement of the Air Ministry that it is designing special aeroplanes for different stages of the route which will link up Great Britain, Egypt, India and Australia. The first stage from London to Zurich is in operation, and its extension to Constantinople and Egypt will begin in 1925. The existing Air Force route will then join up and carry on to Calcutta *via* Baghdad, Karachi and Allahabad. Between Calcutta and Rangoon all-metal flying boats, proof against tropical weather, will be used, and an extension will be made to Australia *via* Singapore. It is anticipated that mails will reach Australia in 100 hours from London. Australian railways will take over the air traffic at Darwin.

Land Mortgage Banks.

A conference, attended by the Registrar of Co-operative Credit Societies and his assistants as well as by representatives of the provincial bank and several co-operative interests, was recently held in Bombay to consider the question of the feasibility of starting land mortgage banks in the Presidency. The question was first raised at the Gujarat Divisional Co-operative Conference which appointed a committee to go into the matter and frame definite proposals. The committee's proposals were discussed at a meeting of the provincial bank, and it was decided to lay them before a conference where representatives of various interests would be present. The proposals formulated at the meeting of the provincial bank were keenly debated, and the conference came to the conclusion that there was need for special arrangements for long-term land mortgage credit, and that the district should be taken as unit for the formation of separate organizations for this purpose, the area of the district not being necessarily confined to the present revenue district. It was also decided that co-operative societies as well as individuals should be allowed to be members of this new organization. Several of the members present expressed the view that the formation of land mortgage banks should not lead government to curtail the facilities that they are now giving under the Agriculturists' Loan Act. It was also unanimously held that flotation of land mortgage banks would not be possible without State aid. Such State aid has been and is being given to land mortgage banks in various countries and even in our own country, the local governments of Burma and Madras have recently decided to do the same. Facilities which will be required in this Presidency would be a guarantee of the rate of interest on debentures which would be issued by land mortgage banks; investment by government in the debentures issued by the land mortgage banks; and making such debentures trust securities under the Trust Act. As the security of the bank will depend to a great extent on the valuation of the agricultural lands mortgaged to it, the question of correctly valuing such lands is a very important one. It was decided therefore to request government to lend trained valuers to such banks in the initial stages of the movement. If government agree to the above proposals, it was thought that four such banks could be started in the presidency during the next year, one in each division. Some of the gentlemen present undertook the responsibility for organizing these banks. If the scheme which has now been fully discussed receives the necessary support from government, the Imperial Bank and the public, it is expected that the question of long-term capital for agricultural purposes will be considerably facilitated, to the great benefit of both agriculture and trade.

Sandalwood Oil.

Both the sandal oil factories at Bangalore and Mysore were worked throughout the past year. About 1,500 tons of sandalwood were received from the Forest Department and 147,674 lbs. of oil were manufactured during the year. The sales of oil amounted to 165,113 lbs., of which 23,905 lbs. were sold by the factories locally. The gross realizations amounted to Rs. 27,26,000. The arrangements for the sale of the oil entered into with Messrs. Whiffen and Sons, London, were terminated at the end of August, 1923, and the Essen Flour Products, Mysore, were appointed agents in their stead from September of the same year.

Glass Bangles.

In pursuance of a resolution passed by the

Madras Legislative Council in 1921 the Madras Government directed the Director of Industries to investigate the possibilities of reviving the glass bangle industry in this Presidency. As a result of his investigation the Director reported to the government that the industry was incapable of any real development, and even with government assistance the indigenous manufacture of bangles would not be able to withstand the severe foreign competition which has already practically killed the industry. The Director holds that, even as a cottage industry, the production of cheap bangles affords so little margin of profit to the agriculturist that it would be unwise to encourage him to pursue it in preference to other cottage industries from which a higher return could be expected. The government obtained the views of some of the leading members of the Legislative Council on the subject before passing order. The replies entirely supported the view of the Director that the indigenous bangles industry is past redemption, and that if bangles are to be manufactured in this country it can only be done in a factory. Government do not consider that in the present financial conditions they would be justified in embarking on an enterprise the prospects of success for which are so problematical.

Banana Production in the Empire.

Although many people in this country associate the banana particularly with Jamaica and the Canary Islands, not more than two-fifths of the fruit imported into the United Kingdom comes from those countries, the remaining three-fifths being supplied by Colombia, Costa Rica and the Republic of Honduras.

In 1922, bananas were imported into the United Kingdom to the value of over £5,300,000 of which amount only about £600,000 represented produce of British Possessions. In view of the fact that the banana can be grown in most tropical lands where labour is available, it would therefore seem advisable to consider whether a greater share in the banana industry could not be undertaken within the Empire, more particularly in parts of West Africa which are within a comparatively short distance of the home market. The present position of the industry in the various countries of the Empire is indicated in an article on "The Banana and its Cultivation with Special Reference to the Empire", published in the current issue of the *Bulletin of the Imperial Institute*, which also gives particulars of methods of growing the fruit and the preparation of various products, such as banana flour and dried bananas or "figs". Of the British West India Islands, Jamaica is the only important banana-producing country, and last year exported (largely to the United States) 12½ million bunches, valued at over £2,250,000, whilst in some years the exports have exceeded 16 million bunches. Trinidad, Barbados and Dominica formerly exported small quantities of fruit but the trade has now almost ceased. British Honduras has an annual output of about half a million bunches, but British Guiana, although producing fruit of excellent flavour, has so far not built up an export trade. In Australia, considerable quantities are grown for local consumption in Queensland and New South Wales, and there is also a large import from Fiji, where banana-growing is one of the staple industries. Other parts of the Empire, such as India, Ceylon, Malaya, and East and West Africa, at present only grow the fruit for their own use.

Experiments have been carried on for a number of years at Merida, Venezuela, with a view to establishing sericulture there on a commercial basis. Although there have been many setbacks and discouragements, the ultimate result, according to a report by the United States Consul at Maracaibo, is said to be a complete success. A grower who has been very active in conducting these experiments states that he now has a species of silkworm, and a variety of mulberry tree thoroughly adapted to the climatic environment of that section of Venezuela, the altitude of which ranges from 3,000 to 4,000 feet above sea level. Land in this vicinity suitable for mulberry trees is practically unlimited. On this plantation there are about 10,000 trees, over 40,000 producing worms, and 300,000 eggs in storage. The actual production of raw silk with the present strain of worms was begun about a year ago, and this plantation is now prepared to begin producing on a commercial basis.

A new diamond field has been discovered near Mafeking, causing a rush of many hundreds in that direction.

Books in Brief.

Short Reviews of Recent Books.

Uses of Waste Materials.

By Prof. Arturo Bruttini. With 95 Illustrations and Diagrams. Published by Messrs. P. S. King & Co., Orchard House, Great Smith Street, Westminster. Price 12*sh.* net.

This is a publication of the International Institute of Agriculture, Rome. It is devoted to a subject of supreme interest to this country, where agriculture is the chief industry of its people. It is a work undertaken in accordance with a resolution of the International Institute of Agriculture in 1920 on the subject of the measures taken by the various countries during the Great War and subsequent to increase and render more intensive agricultural production. Among the measures taken were those pertaining to the encouragement of the collection and conversion by manufacturing processes of waste material in view of their utilization as food or feeding stuffs, in the manufacture of fertilizers, etc. Prof. Bruttini treats this subject in detail in this monograph, which is, as he claims it, "emphatically the work of a technician for technicians" keeping as the main objective the application of the various topics to agriculture and to the interests of farmers. The present English Edition combines the best in the Italian and French Editions of the work and is likely to be more frequently used than either of them. We would particularly recommend the book to all interested in Agriculture. Departments of Agriculture in India cannot do worse than invest 12*sh.* each on a copy of this excellent publication. To show how invaluable it may prove in a country where famine is by no means uncommon, we would refer to the utilization of prickly pear as a feed for live-stock, which is dealt with in this work at pp. 112—113.

Commercial Fruit and Vegetable Products.

By W. V. Cruess, Associate Professor of Fruit Production, University of California. Published by The McGraw-Hill Publishing Co., Ltd., 6 & 8, Bouverie Street, London, E. C. 4.

As canning is being taken up as an industry in this country, it is meet we should recommend this work to those interested in this industry. It contains an eminently scientific treatment of the subject. It deals with the application of the fundamental sciences to the fruit and vegetable manufacturing and preserving processes, of the practical operation and control of fruit and vegetable preserving plants; and of all the technical phases of the commercial handling of fruit and vegetable products. The book is based upon lectures originally delivered by the author to students in fruit and vegetable products during the past ten years. Though the subject is dealt with from the point of view of the instructor rather than from that of the manufacturer, the work ought to prove highly useful to commercial canners and others engaged in the fruits and vegetable products industries. The factory manager and manufacturer will find in it a ready reference work. We would draw special attention to the chapters on Vinegar Manufacture, Olive and Cocoanut Oils, Utilization of Waste Fruits and Vegetables, and Vitamins in relation to fruit and vegetable products. We cordially commend the work to students of fruit culture and to canners, to both of whom it ought to repay perusal.

Acknowledgments.

REPORT OF THE COMMITTEE ON THE INDIGENOUS SYSTEMS OF MEDICINE, MADRAS.—Part II, written and oral evidence. Price Rs. 6.

SHORT NOTES ON THE FIBROUS PLANTS OF TRAVANCORE., By N. K. R. Kurup. M.Sc., Economic Botanist, Travancore.

Topics in the Journals.

Journal of the Ministry of Agriculture for Nov. 1924.—Dairy Co-operation in U. S. A.

2. *Calcutta Review for Dec.* 1924.—Middle Class Unemployment in Bengal. By K. B. Shaw.

SUPPLEMENT.

Mysore Legislative Council.

Speech by A. R. Banerji, Esqr., C.S.I., C.I.E., Dewan of Mysore.

The following are the Concluding Remarks made at the Mysore Legislative Council, on the 1st of July 1924, by Mr. A. R. Banerji, C.S.I., C.I.E., Dewan of Mysore :—

GENTLEMEN—It has been customary in the past for the Dewan to make a concluding speech at the Budget Session of the Legislative Council in which he indicates the general policy of Government in reply to the various criticisms that are put forward in the course of the Budget discussions. It will be observed that during the past several days, the budget has come in for a detailed examination not only during our general budget discussions, but also a second time when the several motions for cuts, which altogether came up to 56 in number, were brought forward, and as it became necessary for Government to explain their policy in regard to each and every matter that came up for decision, it was necessary for me as well as for my colleagues to intervene in the debate in respect of each important question and explain the views of the Government bearing thereon so as to enable the members to have an idea of the situation before recording their votes. It is, therefore, not necessary under the new order of things for the Dewan to make, as has been customary hitherto, any lengthy speech at the end of the session summarizing the business that we have transacted and embodying therein the replies to the various criticisms most of which, in the present occasion, have been already dealt with elaborately by me and my colleagues in the course of discussions. Considering, however, the importance of the occasion—being the first of its kind—and the length and scope of our debates of the past eight days, I feel I should make a brief reference to some of the outstanding features of the criticisms and suggestions that have been made by the non-official members in the course of the budget discussions which give them an opportunity to review the administration in detail in all its branches specially as my colleagues and the Heads of several Departments who are members of this House did not get the usual opportunity as on previou roccasions to make any official replies.

Before doing so, I should like to make a passing reference to the motions for cuts. Out of a total of 56 motions, 36 related to reductions in the departmental allotments including as many as 32 in number intended for the abolition of Duty Allowances given to Officers of the various Departments and 17 motions were for nominal cuts brought forward with a view to ventilate grievances, and point out defects in the administration. As far as possible, both my colleagues and myself have tried to place before this Council, the points of view of Government in all these matters and it is not necessary for me to refer again to them here. As already promised, the Government will be glad to refer the question of all Duty Allowances to the Standing Committee on Taxation and Finance. The Government have also accepted a reduction of expenditure under Forests including Sandal Oil Factory to the extent of Rs. 15,000 and I am particularly glad that 47 motions were withdrawn after the explanations and assurances given by the Government in regard to them.

Turning now to the general criticisms of our budget policy I would, in the first place, with your permission, like to characterize the view expressed by some non-official members that the budget shows a policy of artificial balancing as not only uncharitable, but due mostly to ignorance of some of the vital factors which dominate our present financial position. I refrain from saying anything more than that at present, for I feel that I may, with perfect confidence, leave it to the Council twelve months hence to pass their final verdict on this aspect of the question which will have necessarily to be based on the actual results achieved.

As usual with the non-official members during the past several years, the budget discussion has presented an opportunity to repeat the usual complaint that the administration is top-heavy, that the percentage of expenditure in certain departments is unduly high, that there should be further retrenchments, and that the working expenses of the Railway and the Electric Departments are disproportionately high. In dealing with these criticisms, Government have, I believe, by quoting correct statistics and local circumstances, done all they could to remove the misapprehensions that still continue to exist in the minds of the non-official members on the subject. Considering the fact that it is nearly 10 years since these very opinions have been repeatedly expressed in the Mysore Legislative Council, and repeated year after year in spite of the very effective replies given by the Finance Department and finally by the Dewan, might I venture to suggest that as regards the statistical information which some of the non-official members have based their arguments upon, they would very kindly have them verified by the Financial Department in the first instance and obtain from the Financial Secretary all the requisite information for purposes of comparison, so that a fair and equitable consideration of the question of the establishment charges in the departments, such as Public Works, Land Revenue, Forest, Income-tax, etc., may be ensured without any fallacious inferences? I do not wish to labour the point now, for in my concluding speech at the Representative Assembly the other day and during the discussions here, we have attempted to put before the non-official side of the House correct figures to show that many of the inferences and deductions as regards the higher percentage of expenditure in the Mysore State are erroneous.

It is necessary to my mind, therefore, once for all to remove from the minds of the non-official members the impression that the Mysore Administration is more expensive than the British Indian Administration and that a proper comparison of almost every department will prove conclusively that the standard of expenditure in our administration is fixed at a much lower level. I propose, however, to ask the Financial Secretary to prepare a statement giving complete statistics on this point and circulate them to the non-official members so that in future years, when there is a tendency to direct criticisms on the Mysore Administration on the very same lines, it may receive the necessary corrective on a reference to authoritative data which will take into account the varying local circumstances and details.

I have already dealt with the question of the working expenses of our Railways at the Representative Assembly. As regards the ratio of operating expenses to the gross revenue of the Electrical Department in Mysore, I wish to urge that it is probably the lowest that can be found in any similar concern in the world. The Tata Power Company spend 47 per cent of their gross revenues on working expenses. The Cawnpur Electric Power Supply Company spends 54 per cent and in many of the foreign companies, for which I have got statistics, the working expenses vary from 32 to 59 per cent. In Mysore, it was 29 per cent in 1919–20 and it is now reduced to 19.6 per cent. It has further to be remembered that none of the employees of the Electric Department, excepting the accountants transferred from the Comptroller's Office, are on a pensionable basis, nor have they a Provident Fund, at present.

Turning now to some of the general observations, I would like to make a passing reference to the very doleful tone of the speech of our honourable friend, Dewan Bahadur K. P. Puttanna Chetty, as regards the economic condition of the State. Personally, I do not think that we should take such a pessimistic view. The object, I believe, he had in mind was to put before Government the urgent need of development in regard to their land policy, agriculture, irrigation, medical help and sanitation. We thank him for the earnestness with which he urged his pleas, but we would also like to say in reply that the confirmed policy of His Highness' Government has been to move in the direction of giving additional irrigation facilities, increasing food production and giving additional medical aid and sanitation to the rural parts. And if progress during the last few years has been slow, he knows as well as I do, that it has been due to unavoidable circumstances. As soon as our finances show a greater improvement, there is no doubt that the administration will go further forward with the help of our enthusiastic Heads of Departments who are in close association with Government in carrying out the progressive policy in regard to all these matters. I may add that I am strongly in favour of an economic investigation which his speech indirectly suggested and which may once for all give a quietus to all sorts of speculation about the true economic condition of the people and afford reliable data upon which a correct policy for the future development of the country may be formulated. It is not easy to make such an investigation. It is easy to collect all kinds of information leading nowhere, but Government have a strong responsibility in the matter of such investigation which should be in the hands of experts qualified to undertake it. As soon as I can see my way to carry on such an investigation on sound practical lines, I shall take the opinion of this Council and further necessary action in the matter.

I would now like to refer briefly to some of the detailed criticisms which have not been otherwise dealt with by us on the official side in the course of the debate. Several members observed that the estimate of Rs. 121¾ lakhs under Land Revenue for next year was oversanguine. This criticism, I am afraid, has been largely influenced by the lower level of the revised estimate for the current year. This estimate is less than the budget expectation as the agricultural conditions in the current year proved to be unfavourable. In the previous two years, the collections were at a much higher level. In 1921–22, the amount realized was Rs. 115¾ lakhs. In the next year, it was Rs. 118½ lakhs. The average of these two years is Rs. 117 lakhs, and considering the facts that we have some arrears to realize in the next year and that the Revision Settlement in a few taluks also comes into force, an addition of Rs. 4¾ lakhs is by no means unduly optimistic. If the rainfall is sufficient and seasonable, the budget anticipation under these heads is quite within the range of realization, and I may add that this estimate has no manner of connection with the policy of remissions sanctioned this year in the distressed area and is based on the calculations of a normal year.

As regards the scale of salaries prevailing in the Mysore State, Mr. Hosakoppa Krishna Rao observed that the British Indian Provinces should not be our model and that we should follow Japan. The rates of pay allowed to the different services in Mysore are by no means as high as those allowed to the corresponding services in British Indian Provinces. In fact, they are much less in the several grades of the Mysore Public Service. In making comparisons of this kind, it will serve no useful purpose to go for parallels to Japan or other distant countries, the conditions of which are different. We cannot overlook the main facts that Mysore is surrounded by British Indian Provinces, that the qualifications required of recruits for the different services in Mysore are no less exacting than those prescribed in such provinces and that it is not possible to reduce the Mysore scale of pay lower still unless and until a similar movement takes place in British India. If we make a further reduction in the rates of pay prevailing in Mysore, I do not think we can persuade the educated young men of the country to remain within the State. Mr. Ramachandra Rao suggested that steps should be taken to provide careers for Mysoreans in the British Indian Services and the recent instance of a Mysorean topping the list of the I.C.S. candidates cited by him shows what increasing attraction there is now outside the State for capable young men of Mysore to go abroad. There is, therefore, a limit to reducing the scale of pay even in the case of the sons of the soil and it is not possible to go beyond that limit. The effect on the administration, by lowering even the existing standard of salaries and consequently encouraging the educated young men of the country to seek service outside where they can get higher emoluments, cannot also be ignored, and the policy urged is sure eventually to injure the interests of the sons of the soil and lower the standard of the Mysore Administration.

Mr. Hosakoppa Krishna Rao made the statement that the financial position, taken as a whole, was neither sound nor strong. That was rather a strong criticism to make. After years of deficits the revenue accounts of two consecutive years 1922–23 and 1923–24, have been balanced and the budget estimate for the next year has also been framed to achieve the same object, full provision being made for debt redemption. We have also been able to finance our capital outlay of about half a crore each year, for three consecutive years without resorting to public loans. The present position, therefore, is, in my humble opinion, as sound and as strong as we can expect it to be, and I really do not know what Mr. Hosakoppa Krishna Rao's ideas of strong financial position are.

Mr. C. Narasimhaiya made a number of statements and suggestions the incorrectness of which, I believe, was at the time pointed out by the Financial Secretary. I shall, however, give him due credit and briefly allude to them here. He observed that the policy of contributing to the Loan Sinking Funds was not really being pursued, as the arrear payment due for 1921–22 was not traceable in the accounts. Mr. Narasimhaiya

evidently did not look beyond the ordinary Revenue Account for 1922-23, for, if he had referred to the charges met from the extraordinary revenues of that year, he would have discovered the entry. In all such instances any informal enquiry through the Financial Secretary would help to clear up doubts.

He also pointed out that when there were heavy cash balances, there was no necessity to float loans. He appears to have overlooked the fact that the heavy balances were themselves contributed by the loans raised. A further suggestion made by the same member was the formation of a Provident Fund for the Electrical Department and its utilization for purchasing the 7 per cent bonds on account of Loan Sinking Fund. This suggestion is not clear to me as I do not know how the money belonging to one fund can be diverted to another fund.

As the rate of interest is showing a tendency to go down, Mr. Narasimhaiya proposed that we might buy up our 7 per cent bonds. He appears to have ignored the fact that with the reduction in the rate of interest, the price of these bonds is above par and that it is inadvisable for us to purchase them at a premium when we have a right to redeem them at par a few years hence. Mr. Narasimhaiya considers that the Depreciation Funds are being used for financing capital expenditure. This is not the position now. Depreciation Funds are intended for renewals and replacements and they are being used for their legitimate purposes as the need for drawing upon these funds arises; It will be seen from the Budget Estimates that as large a sum as 13 lakhs of rupees is proposed to be spent in the next year for keeping the capital assets of our commercial concerns upto the standard. Action is also being taken to hold in a liquid form as much as possible of the old balances of these funds to meet the demands on them. He also criticized the want of provision for paying interest on the Mining Revenue Capitalization Fund. Here again, he appears to have overlooked the fact that the system in regard to the formation of this fund has been altered and according to the new arrangement which is one of the essential objects of the policy of financial rehabilitation, the entire revenue from gold mining should be saved and used for capital purposes instead of, as under the old system, 60 per cent of such revenue together with interest calculated at a fixed rate. He also wanted to know whether interest on the Famine Insurance Fund was being credited to that fund. As I have already explained, this fund is invested in securities and the annual interest realized on them is being directly credited to the fund.

Whether reasonable proportions of the Liability Funds are being maintained in a liquid form or not was another point raised by him. This question has already been considered by Government and the position has been explained more than once by me in the several Budget Addresses delivered by me before the Representative Assembly.

Mr. D. S. Mallappa observed that the expenditure on the Development Departments had been reduced. This, however, is not the fact. The expenditure on the group head, Moral and Material Development, in the seven years from 1917—18 was as follows :—

	Rs. Lakhs.		Rs. Lakhs.
1917—18 ..	39	1921—22 ..	53
1918—19 ..	52	1922—23 ..	49
1919—20 ..	48½	1923—24 ..	50
1920—21 ..	61	1924—25 ...	55¾

It will be seen that the expenditure has been steadily increasing except in one year, 1920—21, and the addition in the three years from 1922—23 is as large as Rs. 6¾ lakhs. That in a period of retrenchments and curtailment of expenditure in all directions an addition of about Rs. 7 lakhs has been made to the standard of expenditure of the Development Departments should, I think, be sufficient proof to show that these departments are receiving all the attention that it is possible to give them in our present financial position.

Mr. Ramachandra Rao Scindia stated that the Revenue Estimates for the next year were too sanguine and that the balancing of the budget was artificial. I do not think any useful purpose can be served by making such vague observations. I expected him to refer to particular estimates which he considered as having been stretched too high. No doubt, he referred specifically only to one item of revenue, *viz.*, profits of industrial concerns. He thought that it was too optimistic an expectation to estimate for Rs. 67,000 from these concerns for the next year. I would invite his attention to the largest of the items included in this estimate. I refer to the profits of the Soap Factory which in the year 1922—23 amounted to Rs. 31,000. In the current year, they are expected to be Rs. 45,000. The estimate for the next year is Rs. 49,000, that is, Rs. 4,000 more than that of this year, and I do not think that it can be considered as unreasonably high, especially when the factory has been enlarged for increasing its output and reducing the cost of manufacture. The balance under the head of Industrial Works is only Rs. 18,000 and this comparatively small amount is expected to be contributed by five concerns.

Mr. Chandrasekharaiya stated that the triennial policy of financial reform indicated by me in June 1923 had not been kept in view. I would invite his attention to the following extracts from pages 13 and 14 and 32 of my Address to the recent session of the Representative Assembly :—

"You will observe that under a definite policy of financial rehabilitation which comprised within its scope drastic retrenchments spread over a period of more than two years and restricted grants to the various development departments, we are now fairly on the road which will lead us to the goal which we have set before us. There are, however, a few disturbing factors which have yet to be faced.

"We have to aim not only at separating railway transactions from General Administration but also at the separation of the finances of all our productive concerns. Part III of our Revenue Account proposes to achieve these objects but the further elaboration of this scheme of separation will have to wait until Part I of the same Account is reduced to a condition of complete stability."

The next is the second year of the triennium and if the efforts which are now being made to improve the finances prove successful, I think the major part of the aims of the policy that I have indicated in June 1922 will be realized in the period of three years. Of course it cannot be expected that a policy like that which embraces in itself a forecast of three years to stabilize the disorganized finances of the State could be in actual practice exactly the same as was forecasted, and there must be slight deviations here and there. In regard to the criticisms that that policy has in any way been departed from, I should like that member to go into the actuals of the last two years and the budget of

the next year and then judge how that policy has been carried out in all respects, making due allowance for certain very abnormal and unexpected circumstances which, in spite of the ordinary difficulties of our financial position, the Administration had to face, specially in the current year. I may add that the demand for more and more expenditure in certain directions pressed by this House and the Representative Assembly is one of the factors which has contributed to retard the realization of the objects of the policy. Mr. Chandrasekharaiya also stated that the annual standard of our capital expenditure should be reduced. I would invite his attention again to my Address to the Representative Assembly. It will be seen from an examination of the statement referred to on page 18 of the Address that the capital expenditure in 1920—21 was Rs. 111 lakhs and that in 1921—22, Rs. 113 lakhs. The grant proposed for next year is Rs. 47 lakhs, that is, a reduction of over Rs. 60 lakhs, compared with the standard which obtained immediately previous to the year 1922—23. We cannot abandon works in progress like the Krishnarajasagara, nor can we altogether deny funds for the capital purposes of concerns like Railways, nor is it in the interests of the country to refuse funds for paying works as the renewal of the Bangalore Transmission Line. I would invite reference to the details of our capital budget. It will be seen that the grants proposed for next year are limited to works of the description mentioned by me and they have also been fixed as low as possible.

One criticism offered in respect of the estimates was that we systematically under-estimate our revenue. I shall give the Budget Estimates and the actuals for the five years ending with 1922—23 :—

Year	*Budget Estimates*	*Actuals*
	(Lakhs of Rupees.)	
1918—19	298.33	294.24
1919—20	313.66	313.12
1920—21	315.15	313.13
1921—22	306.25	312.05
1922—23	310.40	330.70

It will be seen that in three years of this period the revenue actually realized was less than the Budget Estimate and the difference ranged from half a lakh to four lakhs. In 1921—22 the actuals exceeded the estimate by 5.8 lakhs. In 1922—23 the excess was Rs. 20.3 lakhs ; of this excess, Rs. 10½ lakhs was on account of the surplus revenues of the Civil and Military Station which was not included in the Budget Estimate, as its receipt was not then anticipated. Comparing like with like, the excess in 1922—23 was Rs. 9.8 lakhs. In the two years in which there was an excess, the difference varied between Rs. 5 and 10 lakhs. These figures will show that the charge of under-estimating revenues has no foundation whatever. A difference of a few lakhs on either side in an aggregate of Rs. 330 lakhs is, I think, really a clear proof that our estimating is as accurate as it is possible to make under the present circumstances.

In matters of General Administration, criticisms have been directed against the District Administration, Income-tax, Police, Medical, Education, Railways and a few other departments, and the policy of giving grants for public improvements in cities, towns and villages has also been questioned. In reply to all such criticisms I have already given a detailed answer ; and the fact that all the resolutions for cuts bringing to the notice of Government certain defects and grievances have all been withdrawn after hearing the explanations offered is sufficient satisfaction to Government, although I must add that they will not fail to afford incentives to us to meet non-official opinion as far as possible which, for the most part, has demanded expansion far beyond the limits of our present resources. It must be remembered that many of the resolutions for a cut of one rupee were directed to secure in some form or other, enhanced grants.

Gentlemen, I think I have touched on most of the important points that have arisen in the course of our discussions relating to our financial policy. I hope the statement of our financial policy made in my recent Address to the Representative Assembly together with the detailed explanations given by me in my concluding speech there and now given at the end of this session here, will clear up all doubts and misapprehensions and enable public opinion to focus its attention on the essential points of the Mysore financial problems. We are struggling hard to keep to the sound lines of the policy already laid down and we have every confidence that the results already achieved and those anticipated in the near future will, in spite of any opinion that might have been expressed here to the contrary, fully justify the soundness of the policy as well as the methods that we intend applying during the next twelve months.

I now conclude this session with an expression of our sincere thanks to the non-official members of the Council for all the pains they have taken to put forward the non-official point of view before the Government and for the sweet reasonableness that they have shown after proper exchange of views in respect of all matters in which there was any difference of opinion between them and the Government. After all the controversies, arguments and discussions of the past several days, we part to-day as the best of friends and with one mind, convinced between ourselves that there is little or no difference of opinion on essentials, and while Government will continue to labour without fear or favour of any party or interest, in the best interests of the country at large during the new year which commences to-day, the people's chosen representatives will, I am confident, continue to also work in their own respective spheres to make the work of Government better understood by the people and at the same time make it more liberal and better adapted to the growing aspirations and needs of His Highness' subjects.

On my own behalf and on behalf of my colleagues I thank you for the flattering terms in which you have referred to us. In respect of the suggestions you have put forward in regard to the amenities, I forgot to state that a joint committee of both the Representative Assembly and the Legislative Council will be formed to go into the whole question of the necessary conveniences both in Mysore for the Assembly and in Bangalore for the Legislative Council. We shall in future have more strenuous work and there may be many questions requiring consideration,—questions arising for example out of the interpellation of Mr. B. Narasinga Rao,—retiring rooms, library, reference books, tiffin arrangements and other allied matters. So, before Government take up these questions, they would very much like to have the well-considered recommendations of a few select members of both Houses and after these recommendations are received, Government will see what can be done to afford proper facilities and comforts to the Members of both Houses.

The meeting was thereupon adjourned *sine die*.